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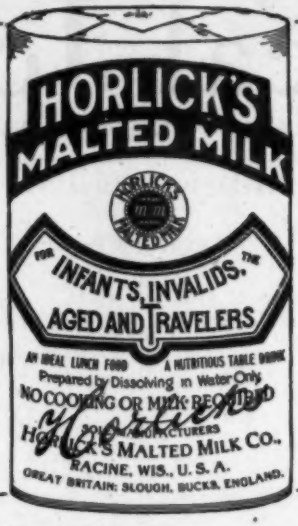
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ILLINOIS MEDICAL JOURNAL

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VOL. XXXII CHICAGO, ILL., AUGUST, 1917 No. 2

Original Articles

THE MORE COMMON SURGICAL EMERGENCIES IN THE UROGENITAL TRACT AND THEIR MANAGEMENT.*

F. KREISSL, M. D.

CHICAGO.

An attempt to discuss all or most of the emergencies arising in the male and female urogenital tract would result in a good-sized volume. Owing to the limited time, I take the liberty to present to your consideration several of those more frequently observed in general work and a few in which prompt recognition and speedy action is of paramount importance to save life.

Injuries of the Vulva and Vagina.—Injuries by a fall upon a hard object such as a bedpost, the back of a chair, a board, etc., usually appear as lacerations of the labia associated with considerable bruising and sometimes free hemorrhage or a hematoma, which is caused by rupture of the vessels of the plexus venosus (P. V. pressed against os pubis and ischii). During pregnancy or in the presence of varicosities of the plexus such hemorrhages may terminate fatally.

Cleansing of the wound, removal of all clots, ligature of spurting vessels and deep sutures are generally sufficient to control the hemorrhage. At other times, however, additional tight packing of the vagina and vulva, and compression with pads outside fastened by a T binder or a perineal spica will be required.

In all such cases it is advisable to look for possible injuries of the bladder, the vaginal fornix, the uterus and the rectum. By neglecting this precaution one might be disagreeably surprised to discover within a few days a vesico-vaginal fistula or a vaginal hernia or other unpleasant and serious complication after having been satisfied with putting a few stitches in an apparently superficial tear in the vulva.

Perforation of the hymen is usually accomplished with more pain than bleeding. The rupture of a very fleshy membrane, however, occasionally causes a very lively arterial hemorrhage and is sometimes complicated by deep fissures of the vagina which may even extend into Douglas' pouch. Ligature of the bleeding points and complete suture of the cleft are indicated.

Abscess of Bartholin Gland.—It should not be difficult to diagnose an abscess of a Bartholin gland nor should there be hesitation to open it. Delay would lead to fistula-formation and hypertrophic induration which then require extensive dissection and a long sick bed, the result being an ugly scar.

The early operation—a very simple one—is performed in the following manner:

Expose the inner surface of the labium and inject into the mucosa over the most prominent portion, 10 minims of a 2 per cent. novocain adrenalin solution, or place a pledget of cotton saturated with a 5 per cent. solution between the labia until anesthesia is complete.

With a thumb forceps grasp and make traction on the most prominent portion of the gland, on the inner surface, and with scissors curved on the flat, cut out an elliptic piece of tissue including all of the abscess-wall to the extent of one-third of the sac. Occasionally, where the gland has not been markedly distended, bleeding may necessitate one or two ligatures.

Immediately following the first cut of the scissors the contents gush out and the sac contracts, the swelling diminishes to one-third, leaving an irregular circular opening, the base of which is formed by the remnant of the sac wall. This presents an important point so frequently overlooked when making an incision for evacuation of abscesses, that with linear incisions the cut edges fall together in close apposition and readily unite, sealing the cavity; whereas in elliptical or circular excisions they cannot assume

*Read at the sixty-seventh annual meeting of the Illinois State Medical Society, at Bloomington, May 10, 1917.

a position favorable to such coaptation, and, therefore, remain open and drain the cavity and healing must take place from the bottom.

The only dressing used is a pad of sterile absorbent gauze, upon which has been poured a small quantity of Van Arsdale's balsam—oil mixture (Bals. Peru, 5 parts, Ol. ricini 95 parts), placed between the labia, to be changed and replaced by the patient each time she urinates. No packing or sutures are required, and the patient can at once walk with freedom from suffering, and with little interference with the ordinary gait. The healing is complete within from seven to ten days.

Acute Pyelitis in Pregnancy.—If a pregnant woman be suddenly taken ill with a chill, a severe pain referred to the bladder or lumbar region or to both, nausea and vomiting, if the temperature rises, urination becomes painful and increases in frequency and the urine contains pus and blood cells, and if the blood examination shows an unusual amount of polymorphonuclear cells—85 per cent. to 95 per cent.—the diagnosis of a pyelitis should be clear. If in such a case the well-known conservative measures should fail, one should not be too anxious to induce premature labor. Since the trouble is generally caused by retention of an infected urine in the renal pelvis, the idea suggested itself to the author years ago to drain and disinfect the pelvis through the ureter cystoscope and this has since been successfully carried out by him in every such case. All of them received immediate relief and went to term. In most of them only one application of silver nitrate was required, in others two or three, and only in a very few upon return of the symptoms the treatment had to be repeated, but in none of them spontaneous premature labor occurred, nor was it necessary to induce the same. It should, however, be admitted that occasionally radical surgery may be urgently required when the infection has involved the kidney parenchyma proper and the acute symptoms should not subside in spite of these conservative measures.

Paraphymosis.—Undue haste and forcible manipulations rarely accomplish the prompt and never the painless reduction of a more recent paraphymosis. Forcibly pulling the prepuce over the glans causes great pain and lacerations of the integument. In reality the gland should be pushed through the constricting ring of the prepuce.

This is best accomplished in the following manner:

Place the penis in a medium-sized washbasin filled with hot water, steady the prepuce with three fingers and thumb of one hand behind the constriction, and exert continuous concentric pressure on the glans with three fingers and thumb of the other hand, particularly on the part near the constriction. In this way the size of the glans decreases within a few minutes, and will then, upon moderate pressure, readily pass through the ring.

In the few cases in which these attempts at reposition should not be successful, it is advisable to incise, under local anesthesia, the constricting ring on the dorsum of the penis and follow this up by a circumcision unless an infectious process of the glans or prepuce should contraindicate the latter.

Torsion of the spermatic cord.—Torsion or twisting of the spermatic cord, one of the rarer conditions demanding early recognition and prompt action, occurs both in normally located and in undescended testicles. It runs its course under symptoms resembling those of a strangulated inguinal hernia in the former and those of acute intra-abdominal intestinal lesions in the ectopic type. If not immediately attended to gangrene is likely to develop, which not only destroys the testicle, but endangers the life of the patient, particularly in the second group—the ectopic variety.

After exposing the lesion by an incision through the scrotum up to the external inguinal ring, or higher up in the ectopic type, the cord should be untwisted and the return of healthy color to the more or less dark blue or black organ watched for in the same way as with a released strangulated gut. If this be the case, the wound may be closed, but if there is any doubt as to the integrity of the testicle, the wound should be left open and a drain placed therein. If gangrene has already set in, which is readily recognized by the peculiar color and the brownish spots dotting the lusterless surface of the testicle, immediate castration above the twisted portion of the cord is urgently required.

Injuries of the testicle.—Penetrating injuries of the tunica albuginea of the testicle are followed by a prolapse of the seminiferous tubules, the entire mass of which being liable to leave the containing shell even through a minute slit and

subsequently be destroyed by necrosis. This mass may be easily recognized by its reddish-brown color and if seen at an early stage, it should be cleansed with sterile salt solution, replaced in its normal bed with a grooved director or a blunt probe and the slit closed with a few fine Lembert sutures. If the prolapsed part should, by its dark color, show evidence of beginning sloughing, it should be resected, the bleeding points seared with the thermocautery and the slit closed in the above manner.

In multiple tears one should, without consideration for the seminiferous tubules, unite as much of the wound-edges as can be brought together by suturing, leaving a wick drain in the vaginal sack. Castration might have to be considered only when extensive destruction of the testicle should render the possibility of its conservation doubtful.

Traumatic lesion of the urethra.—Laceration and rupture of the anterior urethra are always associated with more or less visible oozing of blood. This is not observed in injuries of the deep urethra. Owing to the action of the external sphincter, the blood, after filling the same to its capacity, flows over the nonstriated and, therefore, weaker vesical sphincter into the bladder. Only if the injured should be able to urinate, blood mixed with urine will appear at that time.

But, as a rule, these instances are rare, and inability to void is one of the chief symptoms of an injury to the posterior urethra. The hemorrhage, however, unless a larger vessel be severed, is a negligable factor. Of grave importance on the other hand is the extravasation of urine in the surrounding structures, its decomposition, the subsequent abscess formation, and if not promptly relieved, death in urosepsis. Intractable strictures are also an inevitable result of inadequate or delayed action. With the exception of traumatic lesions which are attended surgically before the injured has had occasion to void, extravasation of urine occurs in every laceration of the urethral mucosa, the amount of which varies with the character and size of the wound.

If only a fraction of the circumference of the anterior urethra be involved, a good sized soft rubber catheter should be passed into the bladder and securely fastened to the penis, left there for five days, by which time the wound will be sealed by granulations which, if not disturbed by premature instrumentation, will prevent further leakage and infection at the time when spontaneous urination is to be resumed. If, however, a soft rubber catheter be arrested at the lacerated part of the canal, one should not attempt to force a passage with a rubber catheter of smaller size or a metal instrument, which would only undermine the urethra and cause more destruction. In such an event access to the wound should be gained by a free longitudinal incision from without, the edges of the torn urethra drawn together by fine catgut sutures and the incision closed.

When dealing with a complete or almost complete transverse laceration of the anterior urethra which oftentimes requires considerable dissection to bring the severed ends of the stumps together, the better plan would be to deflect the urine by means of a drainage tube which introduced into the bladder through a buttonhole incision in the membranous portion may be removed on the fifth day. It is remarkable how quickly and with what little, if any, reaction the continuity of the canal can be restored in this way.

In wounds of the bulbous part near the external sphincter and those of the deep urethra, we will oftentimes be compelled to open the bladder suprapubically, pass a retrograde grooved director from above and open the urethra by an incision in the perineum. The nature of the trauma in these cases usually produces extensive or complete lacerations of the canal and crushing of the surrounding tissues, which without this guide render the recognition of the wound edges very difficult, if not impossible; and consume hours of searching and digging in the viable bruised structures; certainly not an ideal surgical way. After bringing the urethral stumps in apposition by catgut sutures, an indwelling rubber catheter should be introduced all along the canal and left there for five days.

Permanent siphon drainage, however, should be kept up while the catheter is in position, because the bladder urine—most likely by capillary action—always finds a way to seep downward between catheter and urethra, infecting the wound and thereby interfering with prompt healing.

The suprapubic wound may be closed immediately, but the perineal wound should be left open and packed.

If extravasation of urine in the perineum,

scrotum, and other adjacent tissues has already occurred, these parts should be freely incised in order to prevent as far as it can be done extensive sloughing and sepsis by absorption. No attempt should then be made to unite the lacerated urethra, but suprapubic vesical drainage should be employed in order to deflect the urine from the lacerated tissues for at least 4 to 5 days, after which the suprapubic drain may be removed and an indwelling rubber catheter placed along the urethra. This catheter should be withdrawn within 2 to 3 days and then dilatation of the urethra commenced.

Prostate Abscess.—To wait for the spontaneous rupture into the urethra of a prostate abscess is a serious mistake. At best it causes prolonged suffering and leads to unnecessary destruction of the parenchyma and to chronic prostatitis with its subsequent train of sexual neurasthenia and sexual debility. Furthermore, the pus might burrow its way towards the rectum followed by fistula formation or it will break into the peritoneal cavity causing fatal peritonitis. Phlebothrombosis and sepsis is another possibility.

As soon as established and recognized, the abscess should be opened and drained, using the same incision as for perineal prostatectomy, care being taken not to injure the rectum. As the posterior wall of the gland is reached a pointed bistoury is plunged into the fluctuating part, the small opening thus made enlarged with forceps, a drain inserted into the cavity and the wound closed around the tube.

Using a trocar canula for the opening of the abscess through the rectum or the posterior urethra or through the perineum is an antiquated method, unsurgical and unsafe, and at best will unduly prolong the process.

A prostate abscess should be opened between the third and fifth day after the onset of the acute initial symptoms even if fluctuation be not distinctly palpable through the rectum. I have reference to those cases in which a number of miliary abscesses have not yet broken through the separating septa of interstitial tissue. The blocking of free urination, the persistence of a high temperature and a palpable painful swelling of the gland are sufficient evidence of its presence, if one should not avail himself of the corroborative leucocyte count.

Injuries of the bladder.—Penetrating injuries and rupture of the bladder cause identical symptoms, the severity of which however depends on the extent and the location of the lesion.

If the wound should involve the peritoneum, constitutional symptoms will predominate. The patients, immediately after the injury has occurred, present the picture of shock—the pinched face, the anxious expression, a thread-like, rapid pulse, cold sweat and subnormal temperature.

If, as it oftentimes happens, other abdominal viscera be injured, the symptoms produced by the latter may fuse into the former, even overshadowing the same. Bladder wounds which do not involve the peritoneal cavity and are not very extensive usually exhibit much milder symptoms in the early stage. A slight pain and constant tenesmus are complained of, but only a small amount of blood-stained urine is voided. These injuries result from traumatism, such as a fall, a blow, a gunshot or stabbing, but they are also observed as complications of established bladder lesions such as vesical diverticulum, stone, solitary and other ulcers and tumors.

I have seen them caused by forcible instrumentation and by undue and hasty distension of the bladder wall with fluids injected for the purpose of a cystoscopic examination or for intravesical treatments. The accident is most likely to happen in the presence of an ulceration of the bladder wall or a diverticulum. Hence the necessity of consulting the tolerance of the bladder at the time of injecting a certain quantity of fluid and of immediately desisting as soon as the slightest resistance be noticed. But this is only possible if we abolish the obsolete irrigator can and use a piston syringe.

In some of these cases with a very small or puncture-like opening its edges soon close superficially and the injured resumes the voiding of apparently normal quantities of urine. It would then be a serious mistake not to investigate and leave the case to itself because the extravasated urine is bound to decompose and spread either in the pelvic cellular tissue causing extensive suppuration or involving the peritoneum with the subsequent and inevitable sepsis.

The possibility of a bladder injury should always be considered when a trauma has been inflicted upon the lower abdomen or perineum, especially in the presence of the symptoms mentioned before. By a catheter introduced into the bladder we may determine the presence or absence of bloody urine and by injecting a measured

amount of sterile water and watching the amount of return flow we may ascertain whether or not the continuity of the bladder-wall be intact. It is hardly necessary to mention the possibility of bone fragments lodging in the bladder cavity after crushing injuries involving the pelvis or to urge the necessity of their prompt removal.

The treatment of a laceration, puncture, or rupture is practically the same. Free exposure of the rent; suture and drainage.

Urine Retention.—When confronted with a case of sudden and complete retention of urine, the physician should first look for its cause and then decide on the means for immediate relief, which in some will be accomplished by conservative steps, while others will require radical surgical action. It should be remembered that in one group the retention is brought about by an obstruction, in another by reflex spasm and in a third by muscular paresis.

Sudden complete retention may set in when a small renal or vesical calculus being expelled from the bladder becomes lodged along the urethra, mostly in the prostatic part or at the external meatus. Here the anamnesis will reveal a preceding renal colic or vesical irritation. Sudden retention also occurs as a complication of acute vesiculitis, prostatitis and prostate abscess. The history of urethral infection or trauma, together with rectal palpation, will plainly point to the cause.

On the other hand sudden and complete retention appearing in men afflicted with strictures of small caliber or with so-called prostate hypertrophy is always preceded by symptoms of straining and frequent urination in shorter intervals than normal, extending over a longer period.

To guess at the relation of a sudden retention of urine to a preceding case of labor or to a recently performed operation on the rectum or the female genitals or to a succession of hypodermic injections with morphine should not be a very difficult task.

Cerebral or cord lesions (either of a spastic or paralytic character) may not always be readily recognized as the cause of sudden retention at first glance, but should be thought of and searched for with our well-known diagnostic aids, when other lesions have to be excluded from the etiology.

Sudden urine retention during acute infectious diseases is a condition so frequent, so well known and so manifest that I may be permitted to pass over it without further comment. In almost all cases of sudden retention there are two symptoms present, painful, fruitless tenesmus, and an overdistended bladder demonstrable by dull percussion-sound above the symphysis. Tenesmus, however, may be absent in cord and cerebral lesions and in acute diseases with a clouded sensorium. It is necessary to emphasize this vesical distension as in contradistinction to tenesmus coupled with an empty or nearly empty bladder as observed in urine blocking caused by obstructing renal and urethral calculi. Anuria without tenesmus complicating bilateral renal insufficiency should hardly be mistaken for vesical retention.

Some cases of vesical retention can be at least temporarily relieved by catheterization with suitable instruments, some even without much instrumentation. At times irrigation of the external genitals with warm water or a hot sitz-bath will suffice to overcome a spasmodic contraction of the vesical sphincter, in others the instillation of a few drops of a 1 per cent cocain solution in the vesical neck is helpful to relax the muscle. The injection into the bladder of a warm mixture of 1 ounce of sterile water and 2 drams of glycerin is also useful for the same purpose.

In detrusor paresis and obstructions such as strictures, prostate abscess or so-called hypertrophy, evacuation of the bladder by catheter becomes necessary.

These catheters vary in size, shape and texture according to the nature of the trouble. In prostatic obstructions flexible so-called Mercier's with an angular curve of large caliber ranging from 22 to 28 French scale are to be used. In prostatitis, prostate abscess and also in detrusor paresis only medium sized elastic so-called Nelaton catheters are permissible, and in stricture-retention small sized flexible or metal catheters attached to filiform guide-bougies should be employed.

One may readily understand that a flexible bougie of large size is apt to follow the twisted shape of the prostatic urethra, gliding over the obstructing nodes, while a small calibered gum catheter will be caught in these winding, angular curves, and when finding resistance at the adenomatous protrusions, will be coiled up in the deep

urethra. If much difficulty was experienced in passing it through a stricture or over a bad prostatic obstruction and false passages in the canal, it is better practice to secure the catheter in its position in the bladder at least for a day than be compelled to repeat the procedure within a few hours.

It should hardly be necessary to urge the most rigid asepsis and antisepsis in all these procedures and the utmost delicacy in manipulating catheters in the urethra and through the obstructing tissues. Roughness and force will bring about lacerations and false passages with the inevitable train of bleeding, infection and urethral shock. Frequently voluntary urination will be resumed through proper catheterization; in other cases, obviously requiring operative procedures, ample time is thereby afforded for the necessary preparatory steps. Where skillful attempts to enter the bladder fail, drastic surgical relief is demanded.

In so-called impassable strictures and prostatic obstructions, supra-pubic aspiration or puncture, both very simple and harmless procedures, are indicated. Depending on the local and general conditions in the individual case and on the further steps in contemplation after the urgency of the case has been taken care of, one will either be satisfied with a single aspiration of the retained urine or resort to supra-pubic puncture and subsequent drainage.

Lege artis performed, the steps for the operation are as follows:

Shave and cleanse the supra-pubic region, infiltrate with a 1 per cent novocain adrenalin solution successively all tissues down to the prevesical fat, make a vertical skin incision from the symphysis upwards one-fourth inch long, and, keeping close to the edge of the bone, plunge a trocar canula in a downward and slightly forward direction through all the tissues into the bladder. Withdraw trocar needle, introduce through the canula a well-oiled small-sized elastic catheter until it reaches the bottom of the bladder and remove the canula over the catheter. It is advisable to stiffen its lumen with a long and slender metal probe, which helps to steady the catheter and prevents its being pulled out of the bladder while the canula is being withdrawn.

Where there is no reason to give more than immediate relief, aspiration will suffice. After shaving and cleansing the supra-pubic region in the customary way, the aspirating needle keeping close to the edge of the symphysis, is plunged in a downward and forward direction into the bladder and its contents removed by aspiration, whereupon the needle is withdrawn.

No leakage through the puncture opening in the bladder wall need be anticipated, the same being safely sealed by the time the bladder becomes distended again.

When introducing the trocar or the aspirating needle in the previously mentioned downward and forward direction, one need not be afraid of injuring the peritoneum in either procedure, since—rare abnormal pathological conditions excepted—the peritoneal reflexion in a bladder containing more than 300 cc. of urine is invariably to be found about two to four inches above the vesical sphincter.

Injuries of the Kidney—Injuries of the kidney, whether caused by gunshot, stabs or other penetrating bodies, or as a result of crushing, a blow or a fall, deserve our most serious consideration and should receive the promptest attention. The grave importance of these injuries lies in the danger of hemorrhage, of infection and of the possible destruction of the parenchyma.

As a rule, we are inclined toward speedy action in penetrating, visible wounds, but when the injury be an internal one, when hemorrhage chiefly occurs into the perinephritic tissues and comparatively little or no blood appears in the urine, we are likely to jeopardize the injured person's life by procrastination.

It is true, operative procedures are not necessary in every such case, and hemorrhage subsides by suitable palliative measures in minor ruptures and lacerations, but it would be an unpardonable mistake to draw from this experience conclusions in all renal injuries. On the contrary, one should keep a close watch over these patients, observe the pulse, the respiration and their general appearance and frequently also palpate the upper abdominal quadrant.

If the symptoms of a rapidly progressing anemia are becoming marked, consisting in a rapid, threadlike pulse, paleness of the skin and visible mucosa, persistent yawning and much thirst, and if a palpable round tumor appears in the lumbar and epigastric region, one should not lose any

time with styptics and icebags, but open up the loin and expose the kidney.

The further steps to be taken depend on the severity and extent of the lesion.

In some cases, ligating of bleeding vessels and suture of the cleft or clefts, with or without packing, might suffice. Even in extensive and multiple wounds, especially of the upper third of the kidney—if larger vessels near the hilum are not severed—packing and deep-laid mattress sutures will effectively arrest the hemorrhage.

On the other hand, when the major part and especially the lower two-thirds of the kidney have been badly lacerated and larger vessels close to the hilum are severed, nephrectomy will be the only means to save the patient's life.

Acute Unilateral Septic Nephritis—A severe chill, a temperature of 104 degrees or over, a leucocytosis of as high as 40,000, the pulse running to as much as 150 a minute, the patient exhibiting the well-known signs of an acute septic condition (*e. g.*, face flushed, clouding of the intellect, delirium) and the history of a preceding tonsillitis, middle ear or mastoid infection, a carbuncle or furuncle, an attack of grippe, an intestinal infection, or a curretage of the uterus, should point to an acute unilateral septic nephritis as the cause.

Palpation may elicit some tenderness in the costo-vertebral angle and rigidity of the abdominal muscles on the affected side.

Bilateral catheterization of the urine and a functional test will demonstrate a deficiency in quantity and also a greatly reduced elimination of solids on this side.

In order to differentiate this type of septic nephritis from an acute post scarlatinal nephritis a blood culture should be made, if time and conditions permit. In the septic type the respective micro-organism will be demonstrated, while in the latter the culture will remain sterile. Since these cases—overwhelmed by a profound toxemia—if not relieved surgically, oftentimes terminate fatally within a few days, early exposure and inspection of the kidney is most important. On the condition to be found the further steps will depend. In the diffuse inflammatory type, which is caused by the nonpyogenic colon bacillus, renal decapsulation is indicated, with or without incision of the parenchyma, as might be deemed necessary.

This type is readily recognized by the irregular areas of congestion—red patches—in the cortex and eventually, also, in the pyramides. A quick smear of a scraping taken after incising a patch will demonstrate the presence of the colon bacillus.

In the suppurative type, miliary abscesses are covering more or less of the surface of the cortex, from which material may be secured in mid-operation exhibiting staphylococcus pyogenes or streptococcus. In early nephrectomy we have the only chance to save the patient's life.

5 North Wabash Avenue.

DISCUSSION ON THE SYMPOSIUM

Dr. S. C. Stremmel, of Macomb, thought no class of cases is receiving poorer treatment at the hands of the general practitioner today than urethral stricture. He finds that in simple annular strictures the internal urethrotomy wound will cover over with calumnar epithelium if you occasionally pass a sound after operation.

In one case where a clay bank fell in and smashed an urethra clear down to the prostate, a distance of about four or five inches, seen first when the patient couldn't urinate at all, a suprapubic cystotomy was performed and later an external perineal urethrotomy, producing an urethral fistula.

This was twenty-eight years ago. For three years now the patient hasn't passed a sound nor a catheter or anything. He has a permanent urethral fistula, his sexual life is all right.

Dr. Mowry, of Chicago, related the case of a masturbater who had never had normal sexual intercourse, but used a bottle, which was wrenched loose, causing a severe traumatic urethritis. Although this man had never had a specific urethritis, the pus that came from his urethra was apparently full of gonococci (on the slide). The culture proved there was none, which showed the fallacy of making gonococci slides.

Another patient, after various experiments, introduced three pieces of chewing gum into his bladder. He said two had come back and one remained. With a cystoscope a black mass could be seen. Three months later a phosphatic calculus with the gum embedded was removed by suprapubic cystotomy. A remarkable thing, which the chewing gum people would pay a big price for as an advertisement, was that when the mass was sliced open the spearmint odor was apparent almost all over the operating room.

SPECIFICITY AND NON-SPECIFICITY OF VACCINES.*

DAVID J. DAVIS, M. D.,

From the Departments of Pathology and Experimental Medicine, University of Illinois.

CHICAGO.

Upon the introduction into the body of a great variety of protein substances—blood serum, egg white, bacterial proteins or vaccines, milk and many proteins of vegetable origin—there appear certain complex reactions which may be divided into two categories, the one specific, the other non-specific.

The specific reactions are those which can be produced only by the particular protein in question and result in the formation of the various antibodies and in a change in the cells of the body of such a character that they may be easily stimulated at some future time to form those same antibodies. These specific reactions arise in response to certain properties of the protein known as antigenic properties.

The non-specific reactions result from certain properties or constituents of the protein molecules which are common to many proteins. Ordinarily, they are not manifested when the protein is injected, unless the organism has been previously treated with it and contains sufficient ferment to split the protein into its constituent parts. These constituents are, according to Vaughan, roughly, a toxic and a non-toxic portion, the toxic being non-specific, whereas, the non-toxic is specific. The reactions of the toxic bodies include such processes as leucocytosis, chills and temperature changes, variations in blood pressure and secretions, increased coagulation time and the like. Vaughan says the chief symptoms of infectious diseases are caused by these substances, produced through the disintegration of bacteria by the special ferments elaborated by the body.

Therefore, when many bacterial proteins are incorporated into the body, this double train of events results. Thus, during an attack of typhoid fever, smallpox, scarlet fever, etc., the body becomes at first highly intoxicated and, also, soon highly immune to the particular disease, but not to others. In addition to the toxemia, the specificity factor is here clear and definite.

In other diseases the specific and immunity reactions are manifested very slightly or practically not at all. The toxic reactions, however, may or may not be very marked. Why specific and immunity reactions vary so strikingly in different infections, is one of the most fascinating as well as baffling problems in the study of disease.

Based on the fact that in certain diseases immunity follows an attack, and also upon the experimental work of such men as Jenner, Pasteur and scores of others, many diseases in both animals and man have been treated with the specific germs, living, modified or dead, for both preventive and curative purposes. The prevention of disease by specific vaccines has been generally successful in those diseases in which immunity follows an attack. In man, in typhoid and paratyphoid fevers the results are perhaps the most convincing; they are less striking, though decidedly encouraging, in plague and in cholera. In animals, marked success has been attained with vaccines in swine erysipelas, symptomatic anthrax, and rinderpest. The great majority of infections are not, however, appreciably influenced by specific preventive inoculation. This point is important, because it is in the normal body inoculated for prophylactic purposes that we might expect most favorable conditions for the specific action of vaccines.

Although the literature contains numerous reports on the curative value of vaccines—even more than on their preventive value—on the whole the data is not strikingly convincing as to the success of this treatment. There exist, for example, no body of convincing data in connection with the curative effects of vaccines that compares with that on the prophylactic value of typhoid vaccine.

The doctrine of specificity in disease has played a most important rôle in determining our viewpoints as well as our interpretations of facts in pathology. The great contributions of the bacteriological era, including the germ theory of disease, the discovery of antitoxins, the field of immunity as elaborated by Metchnikoff and Ehrlich and the work of A. E. Wright have all tended to support the dominance of this idea. It was perfectly natural, therefore, when bacteria, living or dead, were introduced into the body, that the resulting phenomenon should be interpreted in

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terms of the principle of specificity. Indeed, so dominant became this idea that, in connection with the great amount of experimental and clinical work done on vaccines and opsonins by Wright and his followers, ruthless disregard of suitable control observations was characteristic of this period. Vaccines,—that is, foreign bacterial protein,—were introduced into the body infected with that bacterium and the results were interpreted as being specific for that particular product and no other.

While a few scattered observations on the effect of non-specific vaccines appeared in the literature even before the work of Wright, it was not until the last few years that properly controlled observations on the comparative effect of various protein products, including different vaccines, began to be made. This data soon tended to show that non-specific factors seemed to play a highly important rôle in the treatment by vaccines. I think it may be said at the present time that most of the prominent workers in this field now regard the non-specific effects of vaccines as of greater importance, at least in the immediate favorable results obtained, than the specific or immunizing effects of the vaccine.

It is difficult to evaluate the results of vaccine administration in the treatment of infections. Many favorable and many indifferent results have been obtained by various prominent workers. The good results have been reported chiefly in connection with gonorrheal infections, typhoid fever, whooping cough, localized staphylococcus infections and certain colon infections.

Up to some three or four years ago the favorable or unfavorable results were interpreted in terms of specificity. About that time Kraus, Ichikawa, Gay and Chickering and others excited much interest in typhoid by reporting strikingly favorable results following intravenous injections of typhoid vaccine. But soon Kraus, Luedke and J. L. Miller reported equally good results by using other substances, such as colon vaccine, albumose, and other foreign protein products. Sterile milk was used by Mueller and Weiss with good results in gonorrheal arthritis, and later Miller and Lusk used typhoid vaccines and proteose intravenously with good results in chronic arthritis.

Culver, working in our laboratory at the University of Illinois, has made a most careful comparative study of the effects of the various bacterial proteins and proteoses, both primary and secondary. This study was confined largely to gonorrheal infections and the bacterial proteins consisted of vaccines of gonococci, meningococci and B. coli, all introduced intravenously. Following the intravenous injections of these vaccines and proteoses a very severe reaction set in, manifested by a severe chill and an immediate slight drop in temperature and leucocyte count, soon followed by a marked rise in both (temperature to about 104 degrees, leucocytes to 25,000-30,000 or more) and profuse sweating. Culver's conclusions are that this treatment in gonorrheal arthritis and epididymitis and in some cases of prostatitis seems to possess decided therapeutic value, and the results appear to be usually permanent in character. He states that gonococcal vaccines do not act specifically, either as a diagnostic or a therapeutic agent, since a similar reaction was obtained by suitable injection of meningococcus and colon bacillus vaccines. Leucocytic and temperature curves carefully obtained following the intravenous injection of these various substances were quite identical. The reactions in non-gonorrheal patients in every way resembled those with gonorrhea. Sixty-two patients with gonorrheal infections were treated; 21 of these were given gonococci with 2 failures; 15 were given meningococci with one failure; 6 were given colon vaccine with one failure. Twelve patients with acute gonococcal epididymitis were treated and all were well within a week. Gonococci, meningococci and colon act alike in this respect.

He has obtained equally good results using intravenous injections of primary and secondary proteoses in these infections. Of five patients given primary proteose, all responded with rapid improvement, and of fifteen given secondary proteose, all except one rapidly improved and were soon well. In several of these cases he studied the antibodies in the serum following the injection and found that there is first a slight fall, followed by a distinct rise in the opsonins and lysins for gonococci. However, the period of improvement and well-being does not parallel to any appreciable degree the rise in antibody content. This is not remarkable, since we have long known that the course of an infection does

not necessarily parallel the demonstrable antibody content of the patient's blood or body fluids.

Culver warns against treating patients with organic heart disease in this manner, but mentions no other contraindication. Clinically, the benefit to the patient runs parallel with the fever and leucocytosis produced, and he suggests that these play a rôle in the treatment.

Culver has also treated a number of cases of localized staphylococcus infections with foreign non-specific protein (autolyzed colon vaccine) and noted that they responded promptly with results comparable to those of Wright's with autogenous vaccines in these infections.

Mathers and Rosenow and Falls have reported results obtained by treating lobar pneumonia with intravenous and subcutaneous injections of vaccines of autolyzed pneumococci. Similar striking reactions were observed followed at times by clinical improvement. Mathers states that the specific pneumococcus vaccine is in no way superior to typhoid, staphylococcus or streptococcus vaccines or to foreign serum.

As to the explanation of these results obtained alike by specific and non-specific therapy, we may briefly mention a number of factors which, no doubt, operate to the patient's benefit.

It is possible that the fever may play a rôle in the destruction of bacteria, especially in infections with the gonococcus, which is highly sensitive to heat. The high leucocytosis is another factor which might exert a very decided influence in overcoming the infection through phagocytosis. Gay and his associates have especially emphasized the effect of temperature and leucocytes in the favorable results obtained by them in typhoid.

It is known from experimental and also from clinical studies that specific antibodies (agglutinins, lysins, etc.) may be stimulated by the introduction into the system of non-specific substances. The specific typhoid bodies in rabbits may be very decidedly increased by injecting into the animal a foreign protein.

Jobling and Peterson, in their analysis of the mechanism of non-specific therapy, emphasize particularly the mobilization of serum proteose and lipase and the rise in the antiferment titre of the serum following the injection of various foreign proteins. Their work on typhoid, pneumonia and other infections indicates the rapid appearance in the blood of ferments after the injection of proteoses and other substances. They note the same phenomenon after the administration of iodine in tuberculosis and syphilis. Here the iodine, according to their view, saturates the fatty acids which act as antiferments and thus liberates ferments which destroy the granulation tissue and make the organism vulnerable to the body fluids or to drugs, like mercury in syphilis.

F. H. Falls, in his work upon the Abderhalden reaction, has pointed out the interesting fact that not only in pregnancy, but in various infectious diseases—typhoid, lobar pneumonia, acute articular rheumatism, malaria, meningitis, tuberculosis and syphilis—the ferment content of the serum, as measured by this method, is distinctly increased. Hence, there frequently appears a positive Abderhalden in these conditions indistinguishable from that in pregnancy and destroys the practical value of the test in the latter condition. The foreign protein in the serum is probably responsible for the ferment increase, and this may explain, also, the increase in the antitryptic power of the blood observed by various workers under such conditions.

One difficulty in vaccine therapy has been to explain the good results, especially in the treatment of acute infections with vaccines. Wright himself early noted this. On the basis of Wright's theory, this mode of treatment was not rational or was contraindicated. In the light of these recent observations we may now believe that such results were due to action of non-specific protein constituents of the vaccine.

An important point is the proper standardization of these protein substances for injection. A substance should be obtained, if possible, uniform in composition and action, so as to minimize the dangers when given by those inexperienced in its use. All who have used these substances intravenously, or even otherwise, point to definite dangers, especially those of cardiac origin. Caution should, therefore, be exercised by all who undertake their administration.

To summarize, recent work tends to show that many substances, including vaccines and foreign proteins and their products, when injected, especially intravenously, will cause a severe reaction, manifested by chill followed by fever, hyperleucocytosis, pain in the affected parts, and sweating. In certain diseases this may then be

followed by a feeling of well-being and often by permanent improvement and cure. In the blood, in addition to leucocytosis, occurs a disturbance of the ferment-antiferment balance and also changes in antibody content, which may be specific for the infecting organism, though produced by a non-specific stimulus.

Comparative studies of the reactions produced by various proteins indicate a striking similarity in their effects on the body, whatever their source. In certain diseases the results are encouraging, though the study is still in its infancy and much more work is necessary to determine the true value as well as to appreciate possible dangers and disadvantages of this form of therapy. For preventive inoculation, specific vaccines find their rational use. In certain conditions, where it may be desirable to inoculate for both curative and preventive purposes, specific vaccine treatment would seem to be an indicated and logical procedure.

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VACCINES FOR PROPHYLAXIS.*

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Immunity or resistance to infection may be either natural or acquired. Acquired immunity may be either active or passive. The latter is that conferred upon an individual by the injection of a prophylactic dose of antitoxic serum, as diphtheria or tetanus antitoxin. Active acquired immunity, which is the only form with which we are concerned in this paper, may be produced by an accidental infection resulting in an attack of the disease with recovery, or by a deliberate inoculation of the body with a living attenuated virus or a killed virus. This deliberate inoculation for the purpose of increasing the resistance of the individual toward infection is generally spoken of as vaccination, and the material used in the process is known as a vaccine. As examples of vaccination with living attenuated virus, may be mentioned vaccination against smallpox and rabies in man and vaccination against anthrax, pleuro-pneumonia and rinderpest in animals. As examples of protective inoculation by means of killed virus, should be mentioned vaccination against typhoid, paratyphoid, cholera, whooping cough and plague.

The protection conferred by smallpox vaccination is too well known to require extensive discussion. The virus, as is well known, is obtained from a vesicle on a calf or heifer that has been experimentally inoculated, under aseptic precautions, with a proper bovine virus, or a virus derived more or less remotely from human smallpox. The protection conferred upon the vaccinated individual is not absolute, but very high during the first two years following a proper reaction. After the first two years it gradually begins to weaken and is generally considered to have vanished in the course of ten years. Revaccination every five years or whenever smallpox is prevalent in the community is, therefore, advisable.

It is difficult to get statistics showing the value of smallpox vaccination, but it is significant that in Germany, where vaccination is compulsory during the first two years of life and re-vaccination is enforced at the time of entering school and again at the time of entering military training, there have been only 626 deaths from smallpox during a period of thirteen years, in a population of fifty-six million people. In 1899 the total deaths in 285 German cities, with a population of nearly 16,000,000, amounted to only four. During the same year there were about 600 deaths in 116 French communities, with a population of 8,500,000, where vaccination is not universal.

Vaccination against rabies is resorted to only in cases where a person has been bitten by an animal that is known to have rabies or is strongly suspected of having the disease. The Pasteur treatment is not a therapeutic inoculation, but is distinctively a prophylactic vaccination with a living attenuated virus. The virus is obtained from the spinal cord of a rabbit that has been etherized just before death takes place following an experimental inoculation with a strain of virulent virus. The attenuation of the virus is usually obtained by drying the cord for a definite number of days over caustic potash. As a rule, the treatment is begun by the subcutaneous injection of an emulsion prepared by grinding up

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in physiological salt solution a small piece of the cord that has been dried for fourteen days. During the subsequent injections the strength of the virus is gradually increased by using a piece of the cord that has been dried for a shorter and shorter period of time, until eventually, usually at the end of the first week, an injection is given with a virus that has been dried for only two days. Harris[1] has recently perfected a method of antirabies treatment which he claims is superior to the Pasteur method in that the time required for complete immunization is only ten days, as against 21 days in the Pasteur method. The attenuated virus is prepared by freezing the fresh cord, after it has been ground up, and then rapidly drying it in a desiccator in a vacuum. The perfectly dry virus may be kept in the cold for three months or longer without deterioration.

It is difficult to obtain accurate statistics in regard to the mortality of bites from mad dogs, but it is generally believed to average from 10 to 16 per cent. It is much higher, however, in cases of bites on the face or hands. Statistics giving the results of the treatment also are more or less unsatisfactory, because many facts are unobtainable. It seems, however, that the average mortality among those where treatment is instituted promptly is below 0.5 per cent and is gradually being lowered from year to year.

Prophylactic vaccination of cattle and sheep against anthrax was discovered by Pasteur in 1882 and is used quite extensively in certain parts of Europe and South America. The method consists of two inoculations made at intervals of about twelve days. The first inoculation is made with an attenuated living culture, which has been grown for ten days or more at 42 degrees Centigrade and has been reduced in virulence until it no longer kills a guinea pig, but is still fatal to white mice. The second virus is more virulent than the first and is strong enough to kill a guinea pig, but not a rabbit. In France from thirty to fifty thousand cattle and horses and from 250,000 to 350,000 sheep are vaccinated annually, and it is estimated that many thousands of animals are saved by this precaution.

The protective value of antityphoid vaccination has been proven beyond a doubt, despite the fact that very discouraging results have been reported from certain quarters. The first attempt to vaccinate men on a large scale with heated typhoid cultures was made by Sir A. E. Wright in 1896.

In 1898 Wright vaccinated about 4,000 men in the British Indian army without untoward effects and with excellent results. During the Boer War, 1900-1902, however, the practice fell into disrepute because a relatively large number of those who had been vaccinated contracted typhoid fever and a considerable percentage of these died. Wright's statistics indicate, however, that the morbidity as well as the mortality among the vaccinated troops was less than half as great as that among the unvaccinated. In the German colonial army in South Africa from 1904 to 1907 the results, also, were not what had been expected, although the statistics show that both the morbidity and mortality among the vaccinated was less than half as large as among the unvaccinated. Another factor which helped to bring the practice into disrepute is the fact that at that time the British army physicians had great fear of the so-called negative phase following each injection, during which period it was thought that the subjects are more susceptible to typhoid infection than normal individuals. It is now definitely established, however, that no such negative phase exists, and during the last ten years the prophylactic has again been extensively used in the British army. The somewhat disappointing results during the Boer War were shown to be due to the following facts:

(a) The vaccine had been heated too high in the process of sterilization and was deprived, to a large extent, of its immunizing properties.

(b) The vaccination was voluntary on the part of the troops and it appears that a great many refused to have a second inoculation, whereas, it is now well known that a single inoculation is of comparatively little protective value.

Since 1907 the vaccine used in the British army has been sterilized by heating at 53 degrees Centigrade for one hour, and the results that have been obtained since that time are excellent. In 1911, for instance, there were only 106 cases of typhoid, with six deaths, among 60,635 vaccinated men, whereas, among 8,477 unvaccinated men, during the same period, there were 64 cases with eleven deaths.

Equally favorable results have been obtained

in the Japanese army since vaccination was started in 1908. Prior to vaccination, in 1903-1908, the typhoid morbidity in the Japanese army was 8 per thousand and the mortality was 1.36 per thousand. Since 1910 the morbidity has dropped to 0.7 per thousand and the mortality to 0.08 per thousand.

In this country antityphoid vaccination has been popularized largely by the work of Major F. F. Russell of the United States army, and that of Richardson and Spooner, of Boston, and Hachtel and Stoner, of Baltimore, and several others. In 1911 Russell published his results of antityphoid vaccination in 11,711 persons. In this large series of cases about 95 per cent experienced little or no discomfort from the inoculation aside from a slight local reaction. The typhoid rate among the vaccinated at that time was only 0.25 per thousand, whereas, among the unvaccinated, for the same period, it was 4.3 per thousand. In the summer of 1911 antityphoid vaccination was made compulsory in the United States army, and the last statistics published by Russell, in 1914, show that there were but three cases with no deaths among the 90,646 troops of the United States army, and two of these had not been previously vaccinated. This leaves, therefore, only one case of typhoid fever among 90,646 vaccinated troops for the year 1913.

Major Russell's statistics are so convincing that it is worth while to study in detail the following table, which was published by him in May, 1914:

TYPHOID FEVER, 1907 TO 1913, FOR THE WHOLE ARMY, OFFICERS AND ENLISTED MEN, AMERICAN AND NATIVE TROOPS—(RUSSELL)

		Cases		Deaths				
Year	Mean Strength	No.	Ratio per 1,000 of Mean Strength	No.	Ratio per 1,000 of Mean Strength	Per-centage of Total Cases	Occurring Am'g Those Who Were Vaccinated Cases	Occurring Am'g Those Who Were Vaccinated D'ths
1907....	69,523	237	3.79	19	.30	8.0	..	..
1908....	74,692	239	3.20	24	.31	10.0	..	..
1909....	84,077	282	3.35	22	.26	7.8	1	0
1910....	81,434	198	2.43	14	.17	7.1	7	0
1911....	82,802	70	.85	8	.10	11.4	11	1
1912....	88,478	27	.31	4	.044	14.8	8	0
1913....	90,646	3	.03	0	.0	0.	1	0

The results reported by Spooner, Hachtel and Stoner, Weston, Townsend and others in civil life are equally encouraging and convincing. Spooner showed that the typhoid morbidity among the nurses and hospital attendants in five of the largest hospitals in Massachusetts was about 1.4 per cent. prior to vaccination. Among 1,361 nurses and attendants who had been inoculated the morbidity dropped to 0.15 per cent, whereas, among 674 nurses and attendants in the same hospitals who refused vaccination, the morbidity for the same period was 1.19 per cent, or approximated eight times as high.

Hachtel and Stoner report having vaccinated 2,044 persons without a single case of typhoid fever subsequent to the immunization. Among 309 vaccinated nurses in several hospitals in Baltimore no cases of typhoid fever developed, whereas, among 82 nurses in the same hospitals, who had refused vaccination, seven cases developed during the same period. They also report 887 vaccinations among inmates and employees in a hospital for the insane without a single case of typhoid fever following the immunization, whereas, among 333 unvaccinated patients in the hospitals, during the same period, there were three cases.

Townsend very recently published an experience with 80 nurses, who were employed in nursing typhoid fever patients during an epidemic, which ought to convince the most skeptical. Forty-five of these nurses were vaccinated when going on duty and none developed typhoid fever, whereas, the remaining 35, who refused vaccination, had among them four cases during the epidemic.

Time does not permit the multiplication of statistics of this kind, although other equally convincing results have been published. It must be mentioned, however, that some rather discouraging experiences, also, have been reported within the last two years. Thus, we find that Trowbridge, Finkle and Barnard, of Minnesota, report an epidemic of typhoid fever among 1,522 persons in a school for the feeble-minded and a colony of epileptics, nearly all of whom had been vaccinated only three months prior to the epidemic. Forty-six inmates developed typhoid fever, all but three of whom had been vaccinated, and there were eleven cases among the employees, only one of whom had been vaccinated. It is difficult to say just what was the cause of this dismal failure of the prophylactic, but it would seem that the vaccine had deteriorated, or was improperly prepared. That this may have been the case is indicated by the fact that 64 per cent of those vaccinated gave a negative Widal reaction a few weeks after the administration of the vaccine.

The statistics given by Sawyer, of California,

in 1915, also are somewhat discouraging. Among 8,124 persons who have been vaccinated with thirteen different vaccines by physicians in California, 61 developed typhoid fever within 30 months after the administration of the prophylactic, and four of these terminated fatally. Some of the vaccines used in this series of cases were sensitized and others were not sensitized, but the results seem to have been practically alike. Sawyer concluded that this high morbidity rate among the vaccinated persons may be due to the fact that only those who are repeatedly and extensively exposed to infection will go to the trouble of being vaccinated, and that some of these were infected with overwhelming doses and the immunity broken down. This may, in part, explain the results, but when we consider the very excellent results that have been obtained among nurses who are employed in the nursing of typhoid fever patients, it would seem that other factors must have entered into the California statistics. It is, of course, difficult to say how many of the vaccines used in this series of cases had not been kept at the proper temperature or were too old when administered. No doubt, some persons fail to develop immunity after vaccination.

In spite of these very unfavorable results, we are forced to conclude from the statistics now available that antityphoid vaccination is certainly as effective in preventing typhoid infection as smallpox vaccination is in preventing smallpox infection. It is difficult to say just how long the typhoid immunity lasts, but Major Firth, of the British army, and Major Russell, of the United States army, who have had the greatest amount of experience in this line of work, express the opinion that immunity lasts at least thirty months and in many cases longer.

In order to get good results, it is, of course, necessary that the vaccine be properly prepared and stored and used before it is too old. The vaccine used in the United States army and by Spooner, of Boston, is prepared from an avirulent 24-hour culture on agar, which is suspended in physiologic salt solution, standardized by counting, killed by heating at 53 degrees Centigrade for one hour, and then 0.25 per cent trikresol added as a precaution against contamination. Vincent, in France, uses an autolysate prepared from a 24-hour agar culture suspended in physiologic salt solution, centrifugated and then treated with ether to insure sterility. Hachtel and Stoner do not use heat in the preparation of their vaccine, but secure sterility by the addition of 0.5 per cent of carbolic acid. Good vaccines are also prepared by the use of heat to 56 degrees Centigrade for 30 minutes, but too high a degree of heat must be avoided. Leishman pointed out in 1908 that the immunizing properties of the vaccine may be destroyed if a preservative (lysol) is added before the culture is heated, whereas, good results were obtained with the same preservative when added after heating. It is very important that a vaccine be stored in a cold place and that it be not too old when used. Vaccines that are kept uniced for a few months are likely to be worthless. The Council on Pharmacy and Chemistry recently advised that vaccines kept at eight degree Centigrade shall not be used after six months from the time of being sterilized, and those which are kept at five degrees Centigrade or less, not after twelve months from the time of sterilization. It appears that vaccines are now being used up to twelve months after preparation, although they are not kept on ice, and it is doubtful, to say the least, whether any protection will be conferred by the use of these products.

Uses and Contraindications—Aside from its use in the army and navy, antityphoid vaccination is especially to be recommended for nurses and hospital employees, inmates in hospitals for the insane, schools for the feeble-minded, prisons and other institutions; labor camps, camping parties, vacationists, traveling salesmen, other members of the household where there is typhoid, and the population in general during times of epidemics and where the water and milk supply are not above suspicion.

As contraindications to its use should be mentioned all chronic infections, such as tuberculosis, tertiary syphilis, rheumatism, and also nephritis and other chronic diseases. Some authorities do not recommend its use in persons over 45 years of age, but Weston uses it in all ages, even above 60 years, without harmful effects. Children stand the inoculation better than adults, although the dose must be reduced according to body weight. The usual dose for adults weighing 150 pounds is 500,000,000 for the first injection and 1,000,000,000 for both the second

and third injections, administered subcutaneously at intervals of ten days. It is best not to make the inoculation into the muscle; because then the absorption is too rapid.

Although most of the reported results are excellent, it must be pointed out that there is a great deal of paratyphoid among the vaccinated troops. This has been the experience in the French army in Morocco and also in the Japanese navy. In fact, Kabeshima is of the opinion that paratyphoid is more prevalent in the Japanese navy since antityphoid vaccination has been instituted than before that time. This, however, may not be entirely correct, but is probably, in part at least, due to the fact that no careful bacteriological diagnoses were made to differentiate paratyphoid from typhoid fever prior to the use of the antityphoid vaccine. Very recently, however, Berry reported that there were about 300 cases of paratyphoid among 1,000 troops of the Fourteenth New York Infantry, who were stationed on the Mexican border during the summer of 1916. All of these troops had been vaccinated against typhoid and no cases of typhoid fever were reported by Berry, but the havoc played among these troops by the paratyphoid infection was almost equal to that experienced in a typhoid epidemic. There were no deaths among these 300 cases, but most of the patients became extremely emaciated and were a very long time in regaining their former health and were, therefore, entirely incapacitated for service. Somewhat similar experiences are reported from France, and to meet this situation, many of the troops are being vaccinated against paratyphoid with a mixed culture of the two organisms, B. partyphosus A. and B. paratyphosus B., on top of the previous antitypoid vaccination. Kabeshima's experience in the Japanese navy shows that very excellent results can be obtained by this method of immunization. From 1908 to 1911, 28,346 out of a total strength of 40,000 men were vaccinated against typhoid fever; 18,834 of these were later vaccinated against B. paratyphosus A. and 11,884 against B. paratyphosus B. During the years 1909 to 1911 the typhoid rate among the vaccinated sailors was 2.4 per thousand and the incidence of paratyphoid A. infection was 3.7 per thousand and for paratyphoid B. it was 0. Among the unvaccinated sailors, for the same period, the typhoid rate was 25.08 per thousand and the incidence of paratyphoid A infection was 10.3 and that for paratyphoid B about 16. The mortality among the typhoid patients who were vaccinated was 7.35 per cent, whereas, that among the unvaccinated was 13.4 per cent.

It is evident from the experience in the armies during the last few years that vaccination against paratyphoid is almost as important in some localities as vaccination against typhoid. It is very desirable, however, that immunization should be obtained as quickly as possible and without any unnecessary loss of time on the part of the men. Kabeshima, and more recently Widal, have, therefore, carried out series of experiments to determine whether or not satisfactory immunization can be obtained towards each of the three organisms by the use of a triple vaccine. Both investigators found that animals can be satisfactorily immunized against B. typhosus and B. paratyphosus A and B by the use of a triple vaccine containing the three cultures in approximately equal proportions. Animals that had been thus immunized with two injections withstood an intra-peritoneal injection of twenty times the minimum fatal dose of the living culture of either of the three organisms. Both Widal and Kabeshima then used the triple vaccines in vaccinating a series of men and observed no more harmful effects than from the use of an ordinary typhoid vaccine. Widal showed that it is possible to immunize men by the injection of three doses of a triple vaccine containing two, two and one-half and three billion bacilli, respectively, mixed in equal proportions. He prefers, however, to use smaller doses in the beginning and to give four injections containing three-fourths, one and one-fourth, two and one-half and three billion bacilli, respectively, mixed in equal proportions. Some investigators, however, prefer to mix the organisms in somewhat different proportion, namely, 50 per cent B. typhosus, 30 per cent of B. paratyphosus A and 20 per cent B. paratyphosus B. In that case the first dose consists of 1,000 million bacilli and the subsequent doses each of 2,000 million.

Prophylactic inoculation against cholera is very similar to that against typhoid fever, but the protection afforded does not seem to be quite as good. Kolle uses 2 mg. of an agar culture,

killed at 58 degrees Centigrade and suspended in physiological salt solution, for the first inoculation, and 4 mg. for the second inoculation. Among 77,907 persons thus inoculated in Japan, 0.06 per cent contracted cholera, whereas, among 825,287 persons not inoculated 0.13 per cent took the disease, or twice as great a proportion as among the vaccinated.

Since the discovery and positive identification of the bacillus of pertussis, sporadic attempts have been made to use a vaccine of this organism in the prevention of whooping cough. The statistics available at this time are rather meager, but those that were properly controlled and are, therefore, worthy of consideration, are very encouraging. Hess, of New York, used five different vaccines in prophylactic inoculations during an epidemic of whooping cough in an orphanage, with fairly good results. Among 244 exposed children, who were given three injections of vaccine, only 20 cases developed, whereas, in another ward of 80 children, where no prophylactic injections were given, 59 contracted the disease. One of the stock vaccines which had been purchased on the market gave very poor protection, whereas, one of those prepared in the research laboratory of the New York City health department gave excellent results. All vaccinations were made with three injections at intervals of three days, using 100, 200 and 400 million organisms to the dose.

Luttinger, also, reports very encouraging results from the prophylactic use of pertussis vaccine. In one hospital ward where pertussis had broken out he vaccinated 23 children and none of them developed symptoms of the disease. One child absolutely refused to take more than one injection and it developed a whoop about ten days after the first injection. The twenty-fifth child in the ward was used as a control and manifested a whoop two weeks later. In a series of nine cases that had been definitely exposed, but exhibited no cough at the time of injection, no cases developed. Among twenty-five additional exposures in this series, who had either a plain cough or a mildly paroxysmal one at the time of the first injection, nineteen stopped coughing during or soon after the treatment. The remaining six cases went through the usual course of the disease, but it should be stated that one of these did not have the prophylactic. The treatment in this series consisted of three injections at intervals of three to four days, with 100, 200 and 500 million bacteria.

Some attempts have been made to use a streptococcus vaccine as a prophylactic against scarlet fever, but these hardly deserve consideration in this paper. As long as the etiologic agent of this disease is entirely unknown, it appears to be hopeless to attempt to prepare a potent prophylactic.

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VACCINE THERAPY IN TYPHOID FEVER.*

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Since the beginning of vaccine therapy in typhoid fever, there has been a good deal of doubt as to its real efficacy. Much was hoped at first, and it is of interest to note the reports in the literature during the recent years. Typhoid fever, like other infectious diseases, varies in epidemics, and care must be used in interpreting any kind of results after treating a few cases with any special line of therapy. One must be extremely cautious about attributing too great or too little importance to the remedies which were used. One must constantly ask himself the question,

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Did recovery, if it took place, occur on account of the treatment or in spite of it? He must impartially analyze the cases to ascertain, if possible, the real value of the remedial agent.

The methods employed are, first, the use of killed typhoid bacilli administered subcutaneously or intravenously. The use of a subcutaneous injection is criticized as being too slow of absorption to stimulate antibody formation. The intravenous use seems to be preferable.

Second, the use of autogenous living vaccines, as reported by Rourke, Evans and Rowland.[1] These were used subcutaneously in doses of 60,000,000 to 300,000,000. Three and four injections were given four to six days apart. They report a sharp local and general reaction. Following this there was a drop in temperature below what it had been running and then they felt that afterwards the patient's condition was better.

Third, the use of sensitized vaccine, as recommended by Besredka and also reported by Gay and Chickering.[2]

Fourth, the use of killed bacteria of other kinds than typhoid, as described by Kraus and Mazza. The use of these they describe as producing similar results. Ludka found that not only killed bacteria, but also artificial protein substances, particularly deudero albuminose, would produce similar results.

The most complete analysis has been made by Watters,[3] who has summarized the results in 1,120 cases, of which 158 were treated by himself. His conclusions are that the mortality was somewhat lowered, the relapses less frequent, the complications lessened, and the course of the disease somewhat shortened. The consensus of opinion of those whose cases he has reported seems to be that typhoid vaccines at least do no harm. There is no marked cutting short of the disease, yet he feels that in general the action is beneficial.

Stone[4] discusses the possible beneficial action of typhoid vaccines and feels that the accumulated statistics are not as yet convincing. He calls attention to the fact that from the beginning of bacterial therapy the belief has repeatedly been expressed that little can be expected of bacterial vaccines in generalized infections. He questions whether the apparent good results would not have followed without the therapy. He points out that the body cells are busily engaged in combatting the poisonous protein groups resulting from the death of the bacterial cells, and in most instances their efforts are successful and recovery takes place. He further urges that the adding of more bacterial protein when the body cells are worked to their capacity does not appear to be justifiable. The stimulus to antibody formation already exists, and there is no need to add more in the average case.

On the other hand, he urges that if the protective responses are retarded, it would be rational to use vaccines that the added stimulus may provoke the proper response. He considers that the evidence of lack of a proper response might be assumed when there is a sufficient leucopenia, marked morning remissions, with a prolonged low type of fever without apparent complications; or, a prolonged low type of fever not due to starvation or complications in individuals of lowered resisting powers, such as alcoholics or luetics.

On the service of Dr. Tice and myself in the Cook County Hospital, and at the suggestion of Dr. Tice, six cases were treated with plain typhoid vaccine and three with sensitized vaccine.

Case 1. A female, aged twenty years, was admitted November 18, 1916; sick two weeks before admittance; running a temperature between 102 degrees F. and 105 degrees F., the pulse ranging between 90 and 100. The leukocyte count was about 4,000. On November 21 she received 50,000,000 killed bacteria intravenously. There was a slight elevation in temperature, but no change in the leukocytes. On November 22 she received 100,000,000, with slight elevation in temperature and no change in the leukocytes. Following this for about a week she ran a slightly lower temperature, when it again rose and she died on the 24th of December.

Case 2. Female, aged thirty years, was admitted October 16, 1916; sick about nine days, running a temperature between 103 degrees F. and 105 degrees F. On October 18 she received 50,000,000 plain killed bacteria intravenously. This was followed by a sharp rise in temperature to 107 degrees F., then a drop to 98.8 degrees F., with a subsequent rise to 103 degrees F. and 104 degrees F. On October 21 she received another 50,000,000 intravenously followed by a sharp rise in temperature to 106 degrees F., and a gradual drop to 104 degrees F. October 22 and 23 there were chills without special rise in temperature. This was followed by a variable temperature, reaching normal about November 1, when she was discharged on November 8 in good condition. The leukocyte count on

1. Brit. Med. Jour,, April 3, 1915.
2. Arch. of Int. Med., February, 1916.
3. Med. Record, 1913, LXXX, 58.
4. Forschheimer's Therapeutics, Vol. VI.

admission was 4,000 and varied between this and 6,000 and was not influenced by the injections.

Case 3. A female, aged twenty-three years, was admitted on August 31, 1916; she had been sick for five days, running a typical typhoid temperature. On October 22 she received 60,000,000 killed bacteria, followed by a slight rise in temperature with a drop to normal three days afterward. At the time of the injection she had a cholecystitis and the leukocyte count ran up to 13,000, but was not influenced by the injection. As she had been sick for eight weeks when she received the vaccine, it is somewhat difficult to estimate its real effect. The cholecystitis improved after its use.

Case 4. Female, aged twenty-seven years, was admitted to the hospital on September 26, 1916, having been sick for three days before admission, running a temperature of 101 degrees F. to 103 degrees F. On September 28 she received 100,000,000, with no perceptible rise in temperature. On September 39 she received 100,000,000, with a rise to 105 degrees F., then a drop to 99 degrees F., to 102 degrees F. A third injection of 20,000,000 with a rise to 104 degrees F. For the next week she ran a temperature varying from 100 degrees F. to 102 degrees F., and was discharged on October 29. The leukocyte count ran from 3,000 to 5,000 and was not influenced by the vaccine.

Case 5. Female, aged forty-two years, was admitted on November 1, 1916, running a temperature from 101 degrees F. to 104 degrees F. On November 10 she received 50,000,000, and thereafter ran a slightly lower temperature and was discharged on December 10. Her leukocytes ran between 5,000 and 6,000 and were not influenced by the injection.

Case 6. A female, aged 21 years, was admitted on December 11, 1916, having been sick for fifteen days before admission, running a temperature between 103 degrees F. and 105 degrees F. On December 15 she received 50,000,000 plain killed bacteria, with no change in temperature or in leukocytes. She was discharged on February 2, 1917.

These cases were all treated with the plain, killed bacteria. The following three cases were treated with sensitized vaccine:

Case 7. A female, aged fourteen years, was admitted to the hospital on February 28, 1917. The temperature was 102 degrees to 103 degrees F., the white blood count about 7,000. On March 7 she received 25,000,000 sensitized typhoid vaccines intravenously. On March 9 she received a second injection of 50,000,000, followed by a moderate rise in temperature, but no change in the leukocyte count. The temperature became normal on March 28.

Case 8. A female, aged twenty-six years, was admitted to the hospital on March 6, having been sick for ten days. The temperature ranged between 102 degrees and 104 degrees F. On March 10 she received 50,000,000 sensitized vaccines intravenously. On March 13 she had a chill and the temperature rose to 105 degrees F. On March 20 she also had a chill with the temperature rising to 106 degrees F., each following an injection. The white corpuscles were about 5,000 and were not influenced by the injections. She had on entrance a palpable gall bladder which persisted throughout the course. Later in the disease her temperature ran very high and she had a couple of hemorrhages from the bowels. At present she is better, but is still running a temperature.

Case 9. A female, aged thirty years, was admitted to the hospital on March 15, having been sick for twelve days. The first dose of sensitized vaccine, about 50,000,000, was given on March 18. There was a moderate rise in temperature but no change in the leukocytes. On March 20 a second infection of 25,000,000 was given and was followed by a chill and a moderate rise in temperature. On March 21 the temperature fell to normal, but on the 23 began rising again and on the 28 she was running a fairly high temperature and had a hemorrhage from the bowels. The white corpuscles remained around 6,000 during the course of the disease.

While these cases are not enough to base any conclusion upon, yet, if we take into consideration the cases reported in the literature that all that is claimed by the most enthusiastic advocates of vaccine therapy is that the course is modified slightly, and that there is no abrupt cutting short of the disease, the nine cases which we have studied here indicate that we do get a reaction in some of the cases following an injection. We have not seen that this reaction was harmful in any way, but it is very difficult for us to see that it was of any decided benefit to the patient. Two of the patients treated with the sensitized vaccine had hemorrhages in the subsequent course. We could, however, trace no relationship between the vaccine and the hemorrhage.

From the reports in the literature and from our observation in these cases we cannot feel very enthusiastic about the routine use of typhoid vaccine in our future cases.

VACCINES IN PERTUSSIS.*

HENRY W. CHENEY, M. D.,
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With such a common and almost universal disease as whooping cough and one in which the hundreds of remedies tried in past years have been so ineffective, it is quite natural that the new vaccine therapy should receive a thorough

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tryout in the treatment of this troublesome disease.

I have had some personal experience in the use of pertussis vaccine which I wish briefly to review with you.

The organism of whooping cough was discovered in 1906 by two Belgian investigators named Bordet and Gengou, and so it has since been called the Bordet-Gengou bacillus. This organism has been regularly found in the secretions of the upper respiratory tract during the early stages of the disease. Autogenous vaccine has been prepared and used by some physicians, but I have used only the stock vaccine put out by the larger pharmaceutical houses, as this seems as effective as the autogenous vaccine and has been more generally used. My preference has been for the so-called combined or polyvalent vaccine which includes not only the pertussis organism, but also the other organisms found in the air passages, namely, the pneumococcus, influenza bacillus, micrococcus catarrhalis, streptococcus and staphylococcus. I use this vaccine because I believe that most cases of whooping cough before they have run very long become mixed infections, these other organisms mentioned having something to do with the severity of the disease as well as the Bordet-Gengou bacillus. This vaccine is given hypodermically, of course, and I use larger doses than at first recommended. To babies one or two years old I give one hundred millions for the first dose or two, doubling this dose later. For older children I have given two or three hundred millions to begin with, doubling or trebling this amount for subsequent doses. There has been some difference of opinion in the past as to the proper interval between doses, some advising an injection every two days, others every four or five days. I have found best results by giving an injection every three days. From four to six treatments will usually be all that is required to get results. The younger children often object to the treatment as they would to any hypodermic injection by crying and struggling, but the older ones receive it with little or no trouble after the first injection. I give it in the arm being easy of access. There is no reaction either local or general after the injection. I have seen no sore arms nor any fever or prostration. There is no condition of anaphylaxis produced in the patients because the vaccine does not sensitize the individual as a foreign serum does. Some authorities recommend the prophylactic use of pertussis vaccine by giving three doses at intervals of three days. I have made no extended use of the vaccine as a prophylactic, but Alfred Hess of New York used it in an epidemic in a children's institution and of 244 cases given vaccine prophylaxis, 21 contracted the disease, while among 75 who did not get the vaccine 59 had the disease. Other observers have good reports of preventive vaccination.

My experience has been in the treatment of children in private practice using the vaccine as a curative agent and the results have been most encouraging. The ages of the patients varied from six months to ten years and in all of them I waited for the characteristic whoop to develop before beginning treatment, so that the diagnosis was sure in every case. I can say that over 90 per cent. of the children improved and in at least one-half of the cases the paroxysms were stopped within two or three weeks.

The beneficial effects are noted in four ways: first, the number and severity of paroxysms is decreased; second, the vomiting soon stops; third, the little patients sleep better; fourth, the disease is shortened.

In some of my cases the results obtained were as brilliant and as striking as those we see after the use of antitoxin in diphtheria. I have had some little patients who were having eight or ten severe paroxysms at night and after the first injection the spasms were cut down to two the next night. The parents of some of my patients noticed how much milder the disease was in their children and how much shorter the course when compared with the neighbor's children who had not been given vaccine treatment.

Authorities on diseases of children vary as to the duration of whooping cough, giving the time all the way from one month to four months. In the face of this we surely should consider the value of the treatment which shortens the period to 20 or 25 days. Of course, we do not expect remarkable and striking results in all cases, but the improvement begins almost at once and I keep on giving the vaccine until the whooping stops, which is usually in two or three weeks. In my series of cases there were no cases of pneumonia or other complications and no deaths. When we consider the seriousness and high mortality of whooping cough in babies under one year, we

should welcome a treatment which promises such good results. An additional advantage is that it can be given hypodermically and thus does not upset the stomach of these little ones as medicine given by mouth might do.

In New York City is established what is called the Whooping Cough Clinic, and from this clinic is reported the largest series of cases treated with vaccines. Dr. Paul Luttinger, in charge of the clinic, reports 1,500 vaccine cases and says there was not a single death where vaccine treatment was begun before the third week and continued regularly. From his experience and that of other doctors he believes that vaccines are of great benefit in the treatment and have undoubtedly reduced the number of deaths and prevented the spread of the disease. Besides the vaccine treatment I insist on having as much fresh outdoor air as possible for the patients, as that is one of the best aids we can employ.

Among the innumerable drugs recommended in the past for whooping cough the practitioner may be bewildered and too often adopts a do-nothing policy which means for the little patient and his family six to ten weeks of a very distressing sickness or even a fatality.

As an antidote for this confusion and uncertainty of remedial agents I desire to urge a thorough trial of vaccine treatment for pertussis which, in a large number of cases, has given most gratifying results.

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DISCUSSION ON SYMPOSIUM

(Abstract)

Dr. Simpson, of Palmer, stated that to immunize the National Guard last summer a friend made four hundred and fifty liters of vaccine in thirteen days—something like one hundred and twelve gallons. When you know that thirty-eight drops of that is sufficient to immunize each soldier you can know how much good was done in that thirteen days' work by one man.

He thought it would be wise for any of the physicians who join the Reserve Corps to take that treatment early. Typhoid fever is a very serious thing for one above forty years of age.

As to the failure of typhoid vaccinations, one must expect a failure occasionally, for you know the old saying that "the exception proves the rule."

Dr. E. M. Sala stated that he had some very good results with the combined catarrhal vaccine in the treatment of pneumonia, but approved the limit that Dr. Cheney put on them and advised changing the treatment.

Dr. Schmidt stated an observation he made in 1914 with antigonococci serum, using massive doses. At that time he noticed in analyzing the case records that no beneficial result was obtained with antigonococci serum prior to about the seventh or eighth day after the last injection.

Temperature began on the seventh day. Each patient gave a history of having broken out into hives with a sharp temperature rise, joint pains, chills, etc., so it led him to the belief that it was in reality not the anti-gonotoxic part, or the anti-toxic part of the anti-gonococcus, but perhaps the anaphylaxis itself had a therapeutical value.

It was very easy to prove that matter by substituting normal serum for anti-gonotoxic serum and, strange to say, exactly the same results were duplicated.

But in one case of acute epididymitis in the Cook County Hospital a man was injected with ten cc. of normal serum and within fifteen minutes he developed acute epigastric pain, puffiness under eyelids, nausea, vomiting, no temperature rise, man looked pretty sick. In questioning, it was discovered that the man was a teamster and his constant association with horses undoubtedly sensitized him.

Dr. Melton has used the pertussis vaccine with good results in one baby seven months of age, a very thin, delicate child, one with poor digestion and a case of catarrhal pneumonia.

To overcome the fear of the child referred to by Dr. Cheney he found it could be overcome in almost all cases by simply using plenty of phenol solution on the surface of the skin for a minute or a minute and a half prior to the use of it. You can use it in most cases and they won't know what you are doing. One little girl, three years old, suggested to her sister in a very gentle way after he had gone that she didn't like the doctor because he pinched her body and she knew nothing at all about injecting medicine into her.

Dr. Nieberger suggested that the use of phenol to relieve sensitiveness is applicable to older people who are very sensitive to pain as well as to children. He also referred to the use of ethyl chlorid to avoid causing children pain when injecting antitoxin for diphtheria. He warned against the use of serums or other biological products that have not been kept in refrigerators.

Dr. Davis: There is just one point I should like to emphasize and that is the necessity for controlled observations. Now this whole subject is in the experimental stage. We are making these experiments right along on human beings, there is no question about that, and I think we are justified in so doing as long as we are reasonably careful and sure that we do not do the patients any harm. We should not forget the fact that we are experimenting and furthermore I think it is wise to say that in our observations one-fifth should be direct observation and four-fifths controlled observations, and I think in all of this work where these various substances are tried, we should divide the patients into at least three series, giving one, for instance, the ordinary treatment, no

vaccine at all; the other perhaps specific vaccines and the other third more or less indifferent substance, or some other substance like proteose, and then we would gradually get a body of data that would be comparable and throw some light on this very difficult subject.

Dr. Ruediger: In connection with this work on specificity and non-specificity, I want to say that the statistics in regard to the immunization indicate that the anti-typhoid vaccine is specific for that organism and not for the paratyphoid. The immunity for paratyphoid organisms doesn't protect against typhoid organisms; neither does the paratyphoid vaccine protect against the paratyphoid body vaccines. There seems to be an absolute specificity.

I want to emphasize the importance of using an anti-typhoid vaccine in families where there is a case of typhoid. A good many physicians still have a fear that they might produce a negative phase and that an individual would be more likely to take typhoid at that time than if he were not injected with the vaccine, but it is advisable to urge upon the other members of the family to take the anti-typhoid vaccine if they have a case of typhoid in the family, just as we advise nurses to take the anti-typhoid vaccine when they go on duty for nursing a case of typhoid.

Dr. Slaymaker: I just want to say that the cases that we reported here we realize are small in number, and too quick conclusions must not be drawn upon them. The principal point we would like to emphasize is this: That the most enthusiastic reports in the literature claim very indefinitely that perhaps the course is shortened a little bit, that the complications are less frequent and that with the personal observation that we have made, we are led to feel that very little must be hoped for, can be hoped for, in the routine of the typhoid vaccine as a therapeutical measure and anyone undertaking or trying this must be prepared to be somewhat disappointed as to any sudden cutting short of the disease.

Dr. Cheney: I am not quite convinced in my own mind that pertussis vaccine as now prepared is the best remedy that we shall discover. It is quite possible that we will find some better solution to use. I am going to experiment along that line myself. Other solutions have produced results, but I recommend to you the pertussis vaccine as prepared at the present time for it certainly does give results.

TIMELINESS IN THE APPLICATION OF RADIUM.*

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Until quite recently the exponent of the subject of radium therapy in such a gathering as I have the honor to meet here, has generally approached his hearers as though there was a certain burden of proof resting on him; or he has felt it incumbent upon himself to frame his remarks as though he were bearing a new message to the greater part of his auditors. He has felt hitherto that it was required of him to set forth as more or less of an extraordinary phenomenon the fact that the radiations from radioactive matter have a peculiar or quantitatively a selective effect on certain forms of diseased tissue. He has had to explain that this phenomenon, rightly employed, could most usefully be turned to therapeutic account, and to carry conviction he has had to present an array of concrete cases and descriptions of the experiences of others.

The time allotted me today is not sufficient for me to follow that line of exposition. Moreover, it is unnecessary now, I trust. The time has arrived in which one may be permitted to take for granted that it is no longer called for to urge these things on most of you. It will be generally acknowledged that the use of radioactive matter for therapeutic purposes has now emerged from the mere experimental stage, that it has proven its worth as an addition to the armamentarium of therapeutics. Indeed the more enthusiastic are suffered to assert that it is well nigh indispensable in certain disorders and even irreplacable in some conditions.

I have, therefore, chosen today to forego any plea for the recognition of radium or other radioactive substances as therapeutic agents, but rather to direct my remarks along a line which may be indicated by the theme I have chosen, namely, "Timeliness in the Application of Radium."

It is but the survival of an old habit for commentators on radiotherapy to still express their misgivings as to whether our knowledge of the proper dosage, screening and exposure in the use of radium is certain enough yet to warrant any advocacy of the general use of radium. Of course, these things are the essentials in the technic of radium therapy. The warning may naturally be sounded that unless regard is had for these essentials, radium treatments will not only be of no avail, but can cause more harm than benefit. All of this is most obvious, but it is equally obvious that this is not peculiar to the practice of radium therapy.

It must be admitted that radium therapists are as yet far from being in reasonable accord about the dosage and kind of applicators to use in all cases. The technic is far from having

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reached a point of standardization, even if that were desirable. The working out of these matters, however, is now far enough advanced by those who are more intensively engaged in the practice of radiotherapy and observations of its results to make whatever general apprehensions there used to be about the practice hardly tenable any longer.

Little attention has, however, been devoted to other factors than lack of standard methods of applying radium, that stand in the way of advance in radiotherapy and a fuller realization of its benefits.

In order that radium can be most efficiently used, there is another line of consideration that should be brought to the notice of the non-expert in radiotherapy, the practitioner who has need to call on the co-operation of the radiotherapist. There is always an optimum time in the history of a case for the use of radium. Full justice to the capabilities of radium as a therapeutic agent depends on the time in the history of a case at which it is called into service. It is preposterous to expect radium to be equally efficacious at any haphazard time in the history of a case.

While, of course, this justice to the capabilities of radium and its good repute as a therapeutic agent are very near to the radiotherapist's heart, there is, in the light of our present knowledge, enough to be gained for the general welfare to warrant the admonition to every practitioner to cultivate an appreciation of the uses and limitations of radiotherapy, just as he should know the value of any other medicament or operative procedure. Indeed, it is being stigmatized as remissness, or something worse, by many clinicians to withhold the possible benefits of radium therapy in certain cases.

In a case of malignancy it is now more incumbent than ever upon the practitioner, before proceeding to operation, to weigh most carefully the possibilities in the outcome of an operation. If an operation is done in the face of a fair certainty that there will be a recurrence of the malignancy, it is an attitude severely to be decried in him, who, without doing anything else, would justify himself by saying that if operation fails, there is radiotherapy to fall back upon.

It is most disappointing to the radium therapist to have cases presented to him only after the operator has reached the end of his resources, because the radiotherapist generally feels that an earlier collaboration between operator and himself would have been more satisfactory. But until practitioners generally have gained a proper cognizance of the field that radium can rightfully claim in therapeutics "the shifting of the burden" to the radium therapeutist, or the attempts to do so, are ordeals that he will have to take somewhat as a matter of course.

It is no elation to the radium therapist to have a practitioner, in turning over a far gone case, to say in effect, "I have recommended radium in this case, not because I have any great hopes from its use, but in order to be doing something for the patient." This is an example of untimeliness in the use of radium that we would remonstrate against.

A well conceived line of treatment even in an operable case will always keep the possibilities of radiotherapy in view. For cases that are operable, but in which experience shows there is a high probability of recurrence, it may be rash at present to say that it were better to leave the whole treatment to irradiation, but it is a view that has been expressed and is likely to gain adherents. At all events, it is permissible to point out in a case of malignancy operated on, followed by recurrence, what the advantage would have been had radiotherapy been applied earlier in the case.

The ever present danger in operation of promoting an early dissemination of the malignancy is one of the disadvantages that would not have been incurred.

The more contracted field in which the radiations would be required to exert their action in a case before recurrence after an operation with its oft-times forbidding erosions and breaking down of tissue is, of course, an obvious advantage.

In cases where distant metastases have formed, there is nothing more than a checking of the malignant process in the immediate region of irradiation to be hoped for. Or even in cases where the recurrence is in an accesible region, the recurring lesion, as experience has shown, may be more refractory to irradiation than the original lesion. This is particularly true of metastases in the submaxillary lymph-nodes formed as sequels to epithelioma of the lips or buccal cavity.

These latter considerations of what might have

been done with radium alone on a case, will probably gain scant respect as yet, but they do call up a capability of radiotherapy that can not be caviled at. This is the prophylactic power of irradiations, which is something possessed by hardly any other therapeutic agent. This is indeed a use of irradiation that has not as yet received the attention it deserves. We are not yet in a position to state that prophylactic irradiation after an operation for malignancy will prevent recurrence, but English and continental radiotherapists have gathered enough data out of an extensive experience to assert with confidence that recurrence can be retarded.

The greater obstinacy to irradiation treatment of fully formed metastases and the greater possibility of affecting metastases in their incipiency, marks the period soon after an operation, in cases operated on for malignancy, as a time for radium application. It behooves the practitioner, therefore, to consider after every operation for malignancy whether treatment is complete without prophylactic irradiation soon after.

Though my main object today has been to present for your consideration what greater benefits from radium might be had in many cases, if it were called into use earlier, my remonstrance against putting off the use of radium does not of course imply that the use of radium in late and desperate cases is to be considered merely as making a showing of "doing something for the patient." The alleviative and arresting effects of radium even in far-gone cases of malignancy usually make its employment worth while. Yet, of course, there are far-gone conditions in which even the most cautions application of radium is forbidden. Such are cases where the status is such that there is danger of fistulae, or perforation of hollow organs, being caused by the reduction of a malignant mass.

In conclusion I would reiterate my plea that practitioners should always bear in mind the capabilities of radium and reiterate my remonstrance against that inclination all too prevalent for practitioners to regard radiotherapy as something apart, as something that as yet has gained no place in the general scheme of practice. It is by careful collaboration between operator and the radiotherapist that not only the advance of radiotherapy is to be promoted, but also the best interests of the diseased safeguarded.

DISCUSSION.

Dr. Melton (Warrensburg) had become convinced that radium is one of the most useful therapeutic agents recently placed before us.

To see the various abnormal conditions that are righted by the use of irradiation, to see what we believe to be permanent benefits and the joy that it brings to many an individual who undoubtedly soon would advance to degrees of severe abnormality with various conditions that we treat in this way makes us believe that we, as general practitioners, should inform ourselves enough to know a case should be treated by irradiation instead of by surgery.

Dr. C. W. Hanaford (Chicago) quoted Dr. John G. Clarke, of Philadelphia, who, after study of some two hundred and sixty-three cases of malignancy of the uterus, stated that he believed that in the future there would be fewer operable cases from the point of desiring to operate than in the past and, therefore, a greater number where radium would be used.

The point to remember in the use of radium is this: That the Gamma rays have a distinct penetration.

We know from cases that have been treated with radium that have died from some intercurrent disease and where a post mortem has been held, that the Gamma rays have reached to the depth of four centimeters. Radium doesn't destroy tissue; it replaces one kind of tissue for another.

He stated the treatment of an ulcer at the vault of the vagina following a hysterectomy for cancer by the application of 51 milligrams of radium heavily screened for 50 hours in 12-hour intervals. The case was examined yesterday, three weeks after the last application and all of the ulcer is healed, there is absolutely nothing but healthy tissue there. It is slightly red.

Dr. Pennington understood the last gentleman to say that radium wouldn't destroy tissue. He has a patient in the hospital at the present time who has a stricture of the rectum as the result of the application of radium, and he suffers a great deal of pain with it.

Dr. Baird (Galesburg) related an experience in the use of radium similar to Dr. Hanaford's.

His patient had had hysterectomy just as soon as she had been informed she had carcinoma. The operation was performed by a very noted, successful surgeon and within three months she had a recurrence at the vaginal vault. There were no erosions as Dr. Hanaford mentioned in his case but the mass was plainly discernible just to the left side of the vaginal vault, extending up in the lymphatic gland.

Supplied by the Physicians' Radium Association with fifty milligrams, and under their instructions he applied it for five or six twelve-hour sessions. This completely relieved this patient of her pain within four or five days, and she discontinued the use of morphin. Before that time she had taken two or three grains of morphin in a hypodermic a day. She left the hospital and returned three weeks later for

examination and this mass had apparently all disappeared with no soreness or tenderness. One week later she came back and the pain had reappeared and her physician had again commenced the use of morphin. The association again advised the use of radium for two thirty-six-hour sessions, with a lapse of about twelve to twenty-four hours between them. This gave no relief and the patient is one of the untimely cases that Dr. Woelfel has mentioned.

He would like to have Dr. Woelfel state how would he apply his radium in doing hysterectomy for a carcinoma where no secondary involvements are found. Would he apply it in the vaginal vault or just where would he place it ?

Dr. Christian (Quincy) offered himself as an exhibit in this matter, having had a little lesion on his nose treated rather indifferently and haphazardly with x-ray applications and carbon dioxide through a good many years without any benefit. After noting that the lesion was probably beginning an eroded ulcer he consulted Dr. Case a year ago.

He was disappointed in the beginning because there was no reaction, nothing to show from the treatment for a number of days. Then a little surface epithelial scaling and that was the end of his nose bleed and there seemed to be no destruction whatever of tissue.

The Chairman: If there is no further discussion, for the information of the society the Chair will take the liberty of asking Dr. Hanaford to answer Dr. Pennington's question as to destructibility.

Dr. Hanaford: I perhaps was confusing in my remarks regarding the destruction of tissue. The ray doesn't destroy tissue, that is true, but the healthy itssue is repaired. You will find in cutting through an irradiated area that it cuts like tissue.

Dr. Woelfel (closing): With regard to the question that Dr. Baird has put to me as to how radium would be applied after a case of hysterectomy, such as he describes: the operation would be completed as they used to be when prophylactic irradiations weren't used and the irradiations applies as closely to the site of the operation as possible. Some radium users apply the radium immediately after operation, or even sew it into the operation wound. But objection has been raised to the application of radium to a fresh operation wound, it being said that irradiations, intense enough to have the desired prophylactic effect, will reduce the power of the tissues to resist infection, or that tissues that have been subjected to trauma cannot withstand long irradiation; hence the irradiation should be postponed until there is restitution. I must say, though this objection is pretty generally disregarded and no such adverse effects have come under our direct notice yet, the prophylactic irradiation will generally be of as much avail four weeks after operation as immediately and it has been my practice to prescribe prophylactic irradiations four weeks after operation.

Concerning that question put to Dr. Hanford about the destructive action of radium rays: The statement which called forth the question, lies outside the limits I set for myself in my paper and is, moreover, so much at variance with the fundamentals of radiotherapy, that I hardly feel called upon to deal with it. Since, however, the statement was called in question and more confusion than ever was added to the matter in the answer, Dr. Hanford having previously stated something about Gamma-rays and in his answer said something about Beta-rays, I beg leave to touch upon the point. Gamma-rays, used within certain limits of intensity have a transforming rather than a caustic action on tissues, but of course, Gamma-rays used very intensely will also cause destruction of tissue. Hence the unqualified statement that Gamma-rays do not destroy cells is most objectionable.

ROENTGEN DIAGNOSIS OF LUETIC LESIONS.*

EDW. S. BLAINE, M. D.

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CHICAGO.

Several of the lesions of syphilitic origin which invade the body tissues can be demonstrated by the x-ray method of diagnosis. These lesions can be readily recognized by characteristic shadows on the roentgenogram. In certain other

Fig. 1.—Skull—Syphilitic Osteo-porosis. Note "moth-eaten" appearance of vault.

forms it is very difficult and in some instances impossible to detect their presence.

Syphilitic lesions which attack the osseous tissue occur in the hereditary and tertiary stages (sometimes late secondary) and these present the least difficulty in their demonstration on the x-ray plate. This is due to the greater relative difference of shadow density on account of the altered amount of calcium content in the involved bone

*Read at the 67th annual meeting of the Illinois State Medical Society, May 9, 1917.

tissues. Regarding the softer tissues, several reports have recently appeared in medical literature, describing the x-ray appearance of gumma of the stomach. On this subject, let me state that the x-ray diagnosis of luetic ulcer is at best a precarious one. It is all very well to hold that a given gastric shadow defect with stomach analysis pointing to ulcer with a positive Wassermann is syphilitic, especially if a subsequent x-ray study following anti-syphilitic medication shows a lessening of the defect. Post mortem

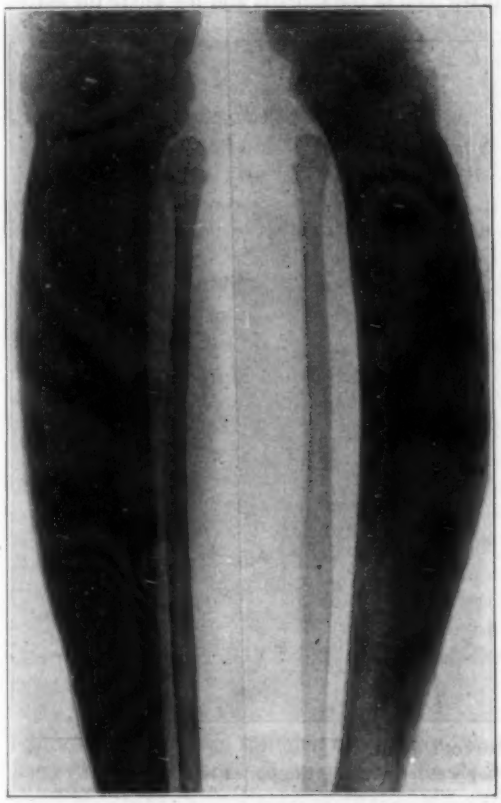

Fig. 2.—Leg—Luetic Osteitis.
Note saber deformity due to localized hypertrophy on one side of shaft.

work at Cook County Hospital rarely reveals syphilitic stomach lesions. We also hear of luetic involvement in other abdominal organs and there have been a few reports presenting the x-ray evidence of pulmonary gumma. The roentgen appearance of luetic aortitis is rather well substantiated; a dilated or increased aortic shadow with a history of specific infection and positive Wassermann all fit very well with the actual finding. The roentgen method is of distinct value in the study of syphilitic lesions involving the bone structures. The question of "lues or not lues" so often presents itself to the clinician that he more frequently calls on the roentgenologist to aid in the diagnosis.

Luetic Periostitis: Normal periosteum is not recognizable on the roentgenogram as such. When it can be seen, it is due either to trauma of pathological change. When the site of a luetic periosteal invasion is confined to a small area and is distinctly localized, it will be seen to present shadow changes greater or less in extent according to the amount of involvement. It is difficult to distinguish the x-ray shadow changes of periosteal syphilis from periostitis due to some other diseases, such as simple inflammatory periostitis. When definite the shadow change may vary from a very slight erosion or roughening to an extensive "furring or raggedness." In the earlier stages of luetic periostitis it will be noticed that the outline of the bone is not changed or broken, but it will be less sharp and less distinct than is found in the normal bone shadows of the part under observation. If this is the case, it will be difficult to state definitely that the condition is a luetic change from the plate alone, but with a clinical history suggesting lues, this evidence will be of material aid in the diagnosis. It must be remembered that such an appearance may also be due to a non-specific cause as, for instance, an early osteomyelitis. One of the most frequent sites of luetic periostitis is that of the anterior margin of the tibia. Given a case in which the x-ray plate indicates a periosteal change such as has just been described, one may still be in doubt as to its significance. A Wassermann test will serve to clear up the question in most cases.

In the presence of an apparent hypertrophy of the periosteum on the anterior portion of the tibia, it is rare to find this to be smooth and regular in outline if the process be luetic. A luetic tibia which shows no erosions of any kind is most unusual and is quite likely a non-specific change. A luetic periostitis usually will not be confined to the periosteum alone, but will extend into and involve the subperiosteal and underlying cortex of the bone.

Sub-periosteal Gumma: A sub-periosteal gumma will be recognized by a definite lifting

of the periosteum under which are shadows of greater or lesser density according to the consistency of the tumor or amount of additional bone deposit which is the particular characteristic of lues. When the center of this mass breaks down and becomes gelatinous, the shadow will be darker than the surrounding bone and will have the appearance of a simple bone cyst without trabeculation. These have been termed "syphilitic bone blisters."

A "bone blister" may be revealed at the site of pain, confined to the shin bone. This has a characteristic appearance and is significant of a luetic process, although in some instances a typhoid osteomyelitis is present, the shadows being almost identical. Too often has antisyphilitic treatment been pushed to tolerance and even beyond in a case of periostitis following typhoid. We must remember, too, that the normal proportions of the tibia are such that the anterior portion is about twice the extent of the posterior, as seen on the lateral roentgenogram; thus we must be careful in the diagnosis of tibial bone lesions, lest we mistake this normal appearance for a pathological indication.

Luetic Osteitis: Lues of the cortical bone is also seen to be an hypertrophy of osseous tissue and is usually confined on one side of the shaft of a long bone when first seen on x-ray examination. It is only in the later stages that it involves the entire shaft of the bone and this takes place by extension, although in hereditary syphilitic osteitis one-third to even the entire bone may be equally involved on all sides. This is often seen in the forearm and leg where the entire radius or ulna or vice versa may show such extensive involvement to the exclusion of the other bone. When the process invades a flat bone, the roentgen appearance and resulting shadows are likened to a "moth-eaten" appearance. The process extends in an irregular manner more or less equally in all directions until the entire bone is involved, giving a marked picture of osteoporosis. It is relatively infrequent that the x-ray studies reveal any involvement of the joints, although infrequently this does take place.

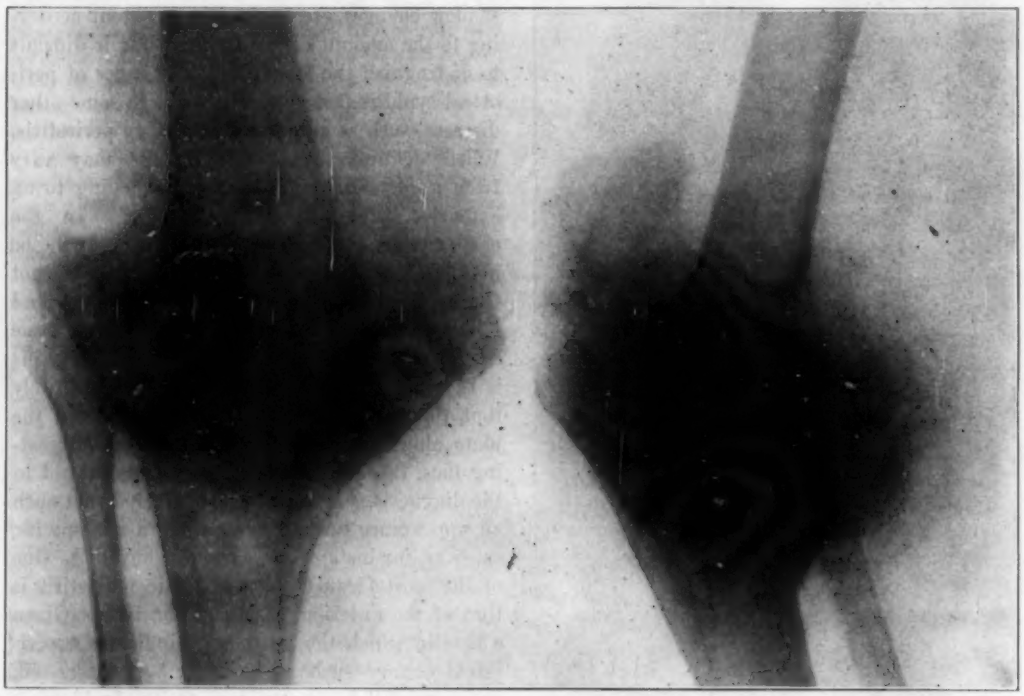

Fig. 3.—Knee—Charcot's Joint.
Note disorganization and evidence of downward pressure causing the bones receiving the weight to give way.

The lesions of luetic osteitis are invariably multiple, although one may find the tibia only involved if the infection be in the early stage. An enormous hypertrophy of the tibial cortex anteriorly resulting in raggedness and furring is spoken of as the "sabre-shaped" deformity seen often in children with hereditary syphilis. If a portion of the dense hypertrophied bone breaks down and liquifies, a cavity appears on the x-ray plate and brings to mind the appearance of a bone cyst. However, in syphilis it is rare to see trabeculations in such an area.

Syphilitic Joint Lesions: The joints, when affected, show a considerable amount of destruction and the usual outlines show more or less variation according to degree. It has been held that syphilitic arthritis is too frequently overlooked on the roentgen examination, but we must admit that, when confined to the softer tissues of a joint with practically no rearrangement of mineral content of the bones entering the joint, that the x-ray physics is such that such information is difficult to obtain. By extension a specific exudative arthritis or an osteo-chondritis may invade the epiphyseal bone area. Here one finds that the roentgenogram reveals a localized disappearance of bone neighboring the joint surrounded by a more dense area of hypertrophied bone. When the luetic process has invaded the neighborhood of a joint this is frequently secondary to a diaphyseal invasion. The shadow appearance will be seen to be distinctly roughened in outline, due to a definite decrease in bone density and loss of the usual striations of normal bone. The more the articular surfaces are involved the more will be the destruction of the apposing surfaces of the bones of the joint.

Specific Arthropathy: Charcot's joints have rather a characteristic roentgen appearance. The shadows represent bone changes of the involved joints according to the degree of trophic disturbance. This may vary from a slight irregularity of outline which cannot be distinguished from an early arthritis deformans to an enormous joint destruction in which all semblance to the normal joint has been lost. These lesions sometimes involve one or more of the vertebral bodies. They may be found in any one of the joints of the body, although the most frequent site is the knee joint, and secondly the ankle. It is usual to find that the bone which is on the under side of a joint, as, for instance, the tibia of the knee, will show evidence of the super-imposed weight causing it to give away—thus the upper portion of the tibia shows far more destruction than the articular portion of the femur of the same joint. These joints are all characterized by a relatively small amount of pain or even total absence.

DIFFERENTIAL ROENTGEN DIAGNOSIS.

Osteomyelitis: It is usual to find the meta-

Fig. 4—Leg—"Paget's Disease"—Osteitis Deformans.
Note all portions of shafts are affected to equal degree, due to generalized hypertrophy.

physis involved, as in the case of lues, but in the latter the involvement is usually on one side of the shaft and is essentially a hypertrophy of bone, while an osteomyelitis has all portions of the shaft about equally involved and the bone density is irregular, showing some localized increase and some localized decrease. Osteomyelitis frequently leads to sequestration, while in lues it is rare to find such a sequel. In hereditary lues in

children one may be at a loss to determine whether the shadows present may be due to rickets. In the latter condition there is greater epiphyseal disturbance with marked curving and bone deformities which do not occur in lues.

Typhoid Osteomyelitis simulates very closely the bone changes of a lues, and one must be careful to get the full history in each instance. Typhoid osteomyelitis may be confused with the sub-periosteal type of syphilitic change.

Tuberculous Osteitis: In this disease the process is more often an epiphyseal invasion rather than a diaphyseal process, although the shaft may become secondarily involved in tuberculosis. In a tuberculous arthritis there will be a far less furring or raggedness with a greater degree of haziness. A tuberculous spondylitis will be seen to result in a greater collapse of the involved vertebral bodies than is the case in lues with an outline of the surrounding cold abscess in the spinal muscles and fascia.

Bone Abscess: Simple bone abscesses are seen to be quite large in size and will be surrounded by a wall of increased bone density. When they become very large, one may find considerable trabeculation throughout the area involved.

Gout: The erosions due to gout may simulate an osteo-chondritis luetica, but the history will make it less necessary to consider a luetic change. Charcot's joints in the earlier stages cannot be distinguished roentgenographically from a pronounced arthritis deformans; in the latter condition the greater amount of pain will serve to assist in a diagnosis.

Sarcoma: In osteo-sarcoma the most frequent roentgen appearance is that of melting away or disappearance of bone at the site of tumor. In lues it is very rare to find a bone disappearance.

Carcinoma: In osteo-carcinomatosis we find irregular decrease of bone, but practically no hypertrophy as in the case of lues.

Osteitis Deformans: Difficulty will sometimes be encountered in differentiating the x-ray shadows of bone changes due to Paget's disease from those of lues. In both conditions the essential feature is a bone hypertrophy, but the history in the two conditions is dissimilar and the arrangement of the bone increase is different. The shadows of Paget's disease reveal a progressive increase in the general bone system, more or less diffuse throughout. The patient first notices an increase in the size of his head; his hat becomes too small or he finds that each new hat has to be of larger size. In Paget's disease there is a marked curving and bending of the long bones, a prominent feature in this conditions. This rarely occurs in syphilis, excepting the curving or bowing of the "saber-shaped" tibia, which is a characteristic finding in lues. The x-ray appearance of the changes in the head in both conditions will sometimes be confusing on account of the apparent similarity, but a Wassermann test is negative in osteitis deformans. In lues of the skull bone the change is largely an osteo-porosis; in Paget's disease it is a diffuse hypertrophy. The hypertrophy involves all sides and all portions of the bones involved, whereas, in lues, usually one side only is affected, which, however, may later involve all parts of the bone.

DISCUSSION.

Dr. Bain confirmed Dr. Blaine's point, that the Roentgenologist can never be certain about the diagnosis of spyhilis from the appearance of the x-ray plate. The attending physicians often are too quick to accept a suggestion on the part of the Roentgenologist that the possibility of a syphilitic lesion exists for an absolute diagnosis. In order to make a diagnosis of syphilis, all of the evidence available, and all that the Roentgenologist can do is to suggest a line of further investigation.

Dr. H. W. Grote (Bloomington) thought the Roentgenologist must assume the greater responsibility in diagnosing syphilis in the very late hereditary and very late acquired cases. These do not show the spirochaeta quite as distinctively.

Dr. Blaine (closing): There is nothing, except to add that cooperation is the thing. It is a case of team work with the man who refers the case. Send an outline of the clinical aspect and the careful roentgenologist can render more help in his interpretations than can be given when a blank order is presented to x-ray this or that part.

730 Monroe Building.

FRACTURES OF THE PELVIS AND RESULTING INJURIES TO THE URETHRA AND BLADDER.*

H. C. MITCHELL, M. D.

CARBONDALE, ILL.

When I decided to write a paper on this subject, it was not my intention to give an elaborate and finished technique on these forms of injuries, but rather to suggest some plan, be it ever so

*Read at the sixty-seventh annual meeting of the Illinois State Medical Society, at Bloomington, May 10, 1917.

elementary, by which any one who does surgery can save the lives of these patients.

As to just what your experience has been with this class of injuries, I do not know, but formerly I ran a pretty high mortality.

As we all know, that with the greatest amount of skill we can bring to bear on these cases, they are very grave in character, and are such as to give the surgeon grave concern.

While these cases do not come to the railroad surgeon as often as they do to the mine surgeon, yet we are frequently called on to treat these forms of injuries.

While it is estimated that less than 60 per cent. of the pelvic forms of fracture are complicated with injuries to the urethra and bladder, or both, yet it has been my misfortune to have treated but few pelvic injuries that did not at least involve the urethra.

Symptoms of pelvic fracture: While there may be practically no deformity in fracture of the pelvic ring, there is usually quite marked shock, which is manifested by pallor, anxious expression of countenance, feeble pulse, cold, clammy skin and weak voice.

There is always manifest a sense of insecurity on the injured side when an attempt is made to stand on the feet, and usually some outward rotation of the limb.

Oftentimes the deformity may be very marked, and yet it is obscured by the tumefaction and extravasation of blood or urine in the tissues.

Crepitation may be manifest when any attempt is made to move or lift the patient. Pain is always manifest when the patient is moved to any appreciable degree.

The greatest care should always be exercised in rotating the limbs, for fear of producing further wounding of the adjacent viscera; in fact, there should never be any attempt made to reduce the fractured bones without first having a good x-ray picture of the entire pelvic ring, and in that way gaining an accurate knowledge of the extent of the fracture.

Only a short time ago I was called in consultation to see a fracture of the pelvis, and the attending surgeon, without having an x-ray of the pelvic ring, and having a fracture of both the pubes and ischium, had attempted to reduce, as they thought, a dislocated head of the femur. The result was, they had turned the fractured ischium entirely around, and it could not be returned without first cutting down, which caused the additional wounding of a great amount of important tissue.

Abnormal mobility may often be produced by steady, gentle pressure over the pubes, or by counter pressure over the ilea, and frequently in this way you may elicit crepitation. If these efforts produce pain at points not pressed upon, it is of great diagnostic value.

The presence of urine extravasated into the scrotum, perineum or over the abdomen, is also of great diagnostic value, and these conditions must be speedily relieved.

One of the best diagnostic symptoms of pelvic fracture is hemorrhage from the urethra.

In suspected fracture of the pelvis, an examination should be made with the finger in the rectum, as with the educated finger, the fractured ends of the bones may be readily detected, also the presence of blood in the rectum usually indicates that the bowel has been punctured by one of the fractured bones of the pelvis.

In treating these cases they should be handled with extreme care so as to prevent wounding of any of the viscera. They should be placed on the back on a firm mattress or fracture bed.

To lie on the back will, in the majority of instances, give these patients the greatest degree of comfort, but occasionally there will be one who is more comfortable lying on the side, and if they are, they should be allowed to assume that position.

The limbs should be drawn up and supported on pillows.

After an x-ray has revealed all the points of fracture, you may proceed to replace the bones in the proper position, as nearly as can be done with safety.

Wide strips of adhesive plaster should be applied around the hips, supplemented with roller bandages, using care to pad the bony prominences with pads of absorbent cotton, so as to prevent undue pressure.

The broad swathes with eyelets and laces may be applied in place of bandages, the object being to produce as nearly as possible immobilization of the parts.

The patient should be kept on the back for at least four weeks, and in bed for six weeks altogether.

Great care should be taken for the first four weeks to avoid any movements that might disarrange the fragments.

If the patient is delirious, an anodyne should be given to produce quiet, and if restless sandbags should be placed along the sides to prevent movements.

The bowels should be evacuated on rubber sheets, and the patient not placed on a bed-pan, as that requires some movement of the patients' pelvis.

In the cases of pelvic fracture where the urethra has been entirely severed, it is a beautiful theory for us to say—pass a sound down through the penis to the point where the urethra has been cut in two, and then cut through the perineum to the point of the sound, first locating the penal end of the urethra and then the vesical end, stitch them together with fine catgut or silk sutures, introduce a soft rubber retention catheter into the bladder, and then sew drainage into your perineal wound; but in practice it is not so easy of accomplishment.

These cases usually come to us after the other fellow has made numerous unsuccessful attempts to draw off the urine of the distressed patient by introducing a metal catheter (and not always a sterile one either) into the urethral tract, usually resulting in making one or more false passages.

When the surgeon attempts to pass the catheter or sound into the bladder, he readily follows the false passage, and when he cuts down on the end of his sound, he is easily an inch or two away from the wounded ends of the urethra, and is groping in the dark, and any attempt he may make to locate the wounded extremities of the urethra only results in failure and further wounding of the tissues.

To my mind, the only rational procedure in these cases is to make a reasonable, but gentle effort to pass a soft rubber catheter into the bladder, and if it does not pass readily, abandon that route altogether, and open the bladder suprapubically, pass your sound into the urethra from the bladder, and the instant it meets with resistance, stop, then pass a sound through the penal end of the urethra, and nineteen times out of twenty, you will feel your sounds come together with a slight metallic click. It is then an easy matter to cut down through the perineum and locate both ends of the urethra, as they are now threaded on your sounds.

There is, however, an occasional case in which the urethra is so lacerated and distorted that you are unable to find the vesical end, as I can call to mind two such cases, where I failed completely to locate the vesical end, but I passed a sound from the bladder until I met with resistance, and then a soft rubber catheter through the penal end until it met the sound, and then cut down upon them and drew the soft rubber catheter back into the bladder and retained it there, and while the ends of the urethra were not sutured together, yet I had good results in both cases.

Some authorities insist that it is better not to suture the torn ends of the urethra together, as it endangers the union of the torn ends, but I cannot bring myself to believe that it is better than to coapt and accurately suture them.

The urethra is usually lacerated by fragments of bone, or by a separation of the symphysis pubis.

One of the best diagnostic symptoms of injury of the urethra, as well as of pelvic fracture, is hemorrhage from the meatus.

Usually, when you ask these patients if they can empty the bladder, they will say, "Yes I can pass the urine but it won't come out." And when they make the effort it causes a stinging pain in the perineum which is produced by the urine extravasating into the tissues in close proximity to the wound.

It is always of the utmost importance to locate the seat of injury, and to know whether or not there is extravasation of urine into the tissues, and its exact location, for we all know what it means to leave urine extravasated through the tissues for any length of time. In a short time it begins to decompose, and a violent infection ensues, followed by high temperatures, septic poisoning and death, either of the tissues, patient or both.

Oftentimes extravasations are followed by extensive sloughs of the scrotum, perineum or abdominal muscles.

Sometimes the extravasated urine will aid us in determining the location of the lacerated urethra. When in front of the bulb, the extravasation will occur in the perineum scrotum, but when the injury occurs posterior to the bulb, the extravasation will occur in the perineum, around the rectum, and often between the abdominal muscles and peritoneum. These symptoms, however, would not be a safe guide.

In all suspected cases of injury of the urethra with extravasation, the only safe thing to do is to incise freely the perineum and the abdomen over the bladder, as the incision will not kill your patient, while an extensive extravasation will.

I want to emphasize the great importance in these cases of opening the bladder supra-pubically, for several reasons. First, it enables you to find the cut or torn ends of the urethra more certainly. Second, it tells you exactly where to make your perineal incision, and with the least wounding of the tissues. Third, it enables you to say certainly, whether or not the bladder has been torn or punctured, and if any urine has escaped, and where. Fourth, it enables you to tell whether or not any urine has extravasated into the peritoneal cavity. Fifth, after you have opened down to the bladder and stripped back the peritoneum, it enables you to replace the fractured bones easier and surer than by any other method, without the danger of injuring any important structures.

Some authorities advise replacing the fractured bones by introducing the finger into the rectum, but I have always regarded that as being a dangerous procedure, for fear of cutting a hole in the bowel by pressure against the ends of fractured bones. Unless there is eversion of the foot, or puncture of the bowel, neck or fundus of the bladder by the fractured end of a bone, think it better not to attempt any reduction of the fracture.

I have had three cases in the past two years, all of which would have been lost if I had depended on perineal drainage alone, as they all had ruptures of the bladder, and the abdominal cavity contained from two to four quarts of urine; and yet, in two of the cases I could outline the bladder as containing quite a quantity of urine.

These cases were all treated by opening the abdomen, removing the urine, flushing out the cavity with large quantities of normal salt solution, closing the holes in the bladder and putting in a cigarette drain down into the cul de sac for twenty-four hours, and placing the patient in the Fowler position. These cases all made prompt recoveries.

The presence of extravasated urine in the perineum will usually be indicated by a purplish hue of the perineum, pain on pressure, and sometimes fluctuation.

Rupture of the bladder will be attended by pain in the hypogastric regions, and a frequent desire to pass urine.

When the catheter is passed into the bladder, and only a few drops of bloody urine escape, it is pathognomonic of rupture of the bladder. To further demonstrate the existence of a rupture, without opening the bladder, the bladder should be emptied, and then a quantity of warm sterile water thrown into the bladder, and if it does not return, it is positive evidence of a ruptured bladder.

In all wounds of the urethra the torn ends should be coapted as nearly as possible, and sutured with fine silk or catgut.

The ideal method in these cases, after the torn ends have been sutured, is to pass a soft rubber retention catheter into the urethra, one or two inches beyond the wound, but not into the bladder, and retain it there for four or five days until union has taken place in the urethra and the perineal wound has healed; then the catheter can be passed entirely into the bladder, and the supra-pubic drain removed.

When a retention catheter is passed entirely into the bladder immediately after the torn ends have been sutured, there will, in the majority of instances, be some urine pass down through the urethra around the catheter, and oftentimes it will defeat your union by breaking through the perineal wound and separating the torn ends, which will retard the healing and result in stricture in some instances, and necessitate a subsequent operation for stricture.

Some surgeons claim to have equally as good results with a fixation catheter in the bladder from the beginning. If, however, that be true, I presume it is a matter of choice on the part of the surgeon.

In conclusion allow me to say, that in these cases the surgeon should never overlook his pathology, and the most important part of his pathology, in the great majority of instances, is the extravasation of urine.

DISCUSSION.

Dr. Kreissl, of Chicago: Dr. Mitchell has presented the subject of injuries to the urethra so perfectly and so much in detail that he has relieved me of reading a great part of my paper, as it deals with the same subject in regard to the urethra and bladder. This paper of mine is so long that I thought I would have to cut out certain phases of it, and I can see now I

can conscientiously do so with the traumatic injuries to the urethra as well. Dr. Mitchell has absolutely covered the ground.

However, I wish to say just one word in regard to drainage, of which he spoke in his last words—the differences of opinion whether we should pass a retention catheter over the sutures in the urethra or whether we should avoid that by making a counter opening somewhere in the perineum and draining from there. I am on middle ground in this matter, and I compromise. If you have a comparatively small suture of the urethra and if you are able to pass a retention catheter over the ulceration, it is well. You may safely do so without fearing to infect the wound. When you have an intensive longitudinal ulceration or laceration—there are all kinds of these extensive lacerations—and when you are able to sew up or even if you shouldn't be able to sew up this end, it is a better plan to deviate the urine as much as possible from the wound.

My procedure if there is an extensive washing of perineal tissues, as Dr. Mitchell said, is to open the bladder and drain. I pass down in front to the point of the wound and try to find the torn edges, but as everybody knows who has to deal with these conditions, you are oftentimes unsuccessful. It isn't a bad plan to make a buttonhole opening behind this suture line and place a catheter through this opening over in the bladder and drain. You needn't fear then an infection of the suture line of the urethra. However, if you choose to pass a catheter all along the urethra you may do so, too, but it necessitates firmness. There is always a seeping of urine, as Dr. Mitchell pointed out, along the catheter from the bladder into the urethra. You can avoid that if you establish constant drainage aside from the drainage through the catheter.

OPERATION FOR CYSTOCELE BY THE ABDOMINAL ROUTE.*

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CHAMPAIGN, ILL.

I feel some timidity, in fact, almost embarrassment, in presenting this paper at this place at the present time, since hearing Dr. Watkins' paper on the same subject at the meeting of The Clinical Congress of Surgeons at Philadelphia last fall, but inasmuch as I have been using this method for some years, I thought perhaps it would be of value to those who happen to be caught in the position in which I have frequently been, and who desire to open the abdomen to fix the uterus and are at a loss to know just what to do with the prolapse of the vagina and bladder. So I will give you the method, claiming nothing particularly original about it, but a possible combination of ideas, which meet the requirements, and you may take it for what it is worth. I have used the operation some seven or eight times and others in my particular neighborhood have also done me the courtesy of trying it, and in all cases, so far as I am able to discover, with a perfect result.

We are all very well aware that in people who pass the menopause, these prolapsed uteri, or rather cases of complete procedentia, sooner or later bring down with them the bladder and the anterior wall of the vagina, and when the uterus has gotten down as far as the pelvic floor will allow it to come, the bladder passes down in front of it and we have a condition which cannot be fixed by any method of incision in the mucous membrane that I have ever been able to find. No operation which merely shortens the mucous membrane will do the work for any length of time. The reasons are quite plain, in that the vaginal mucous membrane, instead of being more or less firmly attached to the cervix on the anterior side up for a distance of one inch or more, as is the case normally, is peeled off and is hanging like a hammock to the extreme end of the cervix, the bladder being retroflexed and lying in that bag.

My first experience in using this operation was in an individual with a complete procidentia, who did not desire a vaginal hysterectomy, although past the menopause; therefore, I pulled up the uterus and discovered that the cystocele bag still to a certain degree remained, and the only way that I could see to fix it was to sew it up. A good many surgeons have stitched up the mucous membrane or the bladder wall to the anterior wall of the uterus from the vaginal side, so it looked to me, since I had the abdomen open and could see what I was doing, why not sew it up from the inside, which was done with a very satisfactory result. Of course, one must not overlook other details of this condition, such as sewing the levator ani muscle up well to make a good pelvic floor support for the uterus in case it should sag too much from a very flabby abdomen or a possible slipping away from its attachment. The operation is quite simple and is performed as follows:

The abdomen is opened in the usual way in

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the center line, the uterus is picked up and held about at the position desired, the bladder is dissected loose from the uterus in front as though you were about to do an abdominohysterectomy, a long-handled forcep is then passed down between the bladder and the uterus, picking up the mucous membrane of the vagina on one side and drawing it up until one has decided the tension is enough, then about two inches to one side of that forcep passing down another, picking up the mucous membrane and drawing it up so as to have the two sides like the rope sides of a hammock, pulled up with a sort of a slack condition in the center in which lies the bladder. It may be necessary to dissect the bladder loose from the vaginal mucous membrane for a short distance in order to hold it up in position, then a row of sutures are passed across the mucous membrane from one force to the other, and attached to the anterior side of the uterus in a sort of a half-moon shape with a concavity upward, after which the raw surfaces, if there be any, may be covered up and the uterus firmly fixed in, and not to, the abdominal wall and the operation is complete.

An operation similar to this was published in *Surgery, Gynecology and Obstetrics* in the December number of last year by Dr. F. G. DeBose, of Selma, Alabama, which, while I have not used it, is upon the same plan except that he attaches the mucous membrane to the round ligaments instead of to the uterus, which may be just as well and possibly better, to form a hammock for the bladder to lie in.

I have not been bothered with a severe cystitis following this operation as has so frequently been the case in operations around the bladder or uterus heretofore, and which is so often the worst thing we have to contend with after gynecological operations.

The operation devised by Dr. Watkins I have had no experience with and, therefore, cannot compare it with this, but the mere fact that Dr. Watkins devised it and advises its use makes it unnecessary for me to try it myself in order to form an opinion that it is about the best one there is, so I am not recommending this operation as better or worse than anyone's else, but only submit it to you with the possible hope that it will be of use some time when nothing else seems to be available, for it certainly does restore these bladders to their normal condition and relieves the symptoms, and when that is accomplished, it seems to me that that is about all that is necessary to accomplish in any operation.

ROLE OF THE PROSTATE IN ACUTE GONORRHEAL INFECTIONS*

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Much has been said and written regarding the role of the prostate in chronic gonorrheal infections.

But until recently slight attention has been paid to it in the acute stage of the disease. That it is being recognized as a factor of more or less importance is noticeable by the more frequent recent contributions to the literature on this phase of the subject.

That it is of paramount importance, has been impressed upon the writer's mind during the last few months by the high percentage of prostatic involvements found early in his small series of cases.

One hesitates to mention numbers in the presence of G. U. specialists. However, as I lay no claim to a new discovery or treatment, it is only fair to say that of the last fifteen cases treated by me fourteen had involvement of the prostate gland; eight were of the rather firm dense type, and six were succulent and vascular but all of them were sensitive to touch, and massage gave a more or less copious supply of prostatic secretion, spermatozoa and pus at the meatal orifice; and was followed by a sense of relief to the patient.

For an understanding of why the prostate is frequently involved in acute gonorrhea, it is necessary to renew our acquaintance with the location and anatomy of the prostate and urethra, and the habits of the gonococci.

The prostate gland is an accessory sexual organ and its close relation to the urethra and its peculiar anatomical structure render it particularly susceptible to infections of the urethral tract. It surrounds the urethra at its entrance into the bladder and is composed of glandular substance and muscular tissue. The muscular tissue constitutes the stroma proper, and to-

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gether with the fibrous capsule supports the glandular substance in its various ramifications. The glandular substance of the prostate consists of numerous follicular pouches, opening into elongated canals which join to form from twelve to twenty small excretory ducts which open directly into the floor of the urethra (in the prostatic sinuses on either side of the verumentanum). At the forepart of the verumontanum is a depression, the sinus pocularis, about ¼ of an inch in depth and throughout its walls are numerous openings of small glands as well as the slit like openings of the ejaculatory ducts. The sinus pocularis penetrates the prostate gland, forming an anatomical pocket and has been termed the uterus masculinus by Weber, its discoverer.

The urethra extends from the meatus to the neck of the bladder. It is about eight to nine inches in length, and except when passing urine or ejactulating semen, it is a closed slit.

These anatomical conditions make it easy for the naturally migratory gonococci, which obtain entrance through the meatus to the fossa navicularis, to travel backward by contiguity of structure through the penile and membranous portions to the prostatic urethra with its numerous openings of ducts, which lead to ramifying pockets throughout the gland and which are lined with prolongations of the urethral mucosa, which also extends into the vesiculae seminales by the way of the ejaculatory ducts.

That micro-organisms are habitually migratory is a universally accepted fact, and in the case of gonococci is frequently shown by the ascending infections of both the male and female generative tracts. It is generally conceded but it is an unproven axiom, that the infection will ordinarily confine itself to the fossa navicularis and anterior urethra, forcing its product of infection outward through the narrowest portion of the urethra, the meatus, rather than moving backward into the more easily distensible portions of the canal, especially when it is favored by a more natural habitat and assisted by gravity as it is while the patient lies abed, which is approximately one-third of the time.

Assuming that two days is an average length of time from the first tingling, itching and pouting of the meatal lips, until the appearance of the discharge at the opening; and assuming that this rate of travel would be maintained, it would require approximately one week before the invading hosts would be due at the prostatic portion of the urethra, and storming the gates of the catacombed gland.

This period of time corresponds very closely with the writer's meager experience as I have not found its symptoms present before the eighth day of the infection.

The presence of the infection in the prostate gland is characterized by bladder frequency and a sense of heaviness and discomfort in the perineum, especially noticeable upon sitting down, and accounts for the victims of acute gonorrheal infections being unable to ride horseback or a bicycle without considerable pain, being caused by direct pressure and bumping of the saddle against the inflamed prostate and vesiculae seminales.

Gentle massage of the prostate at this time will empty the glandular structure of the products of inflammation, and will be followed with a sense of relief to the patient. Continued massage three times a week should not only prevent an extention to the epididymis, by way of the vas deferens, but will keep the glandular structure partially empty until an immunity is established assisted by daily injections of a germicidal solution and the administration of a urinary antiseptic.

This treatment, if consistently carried out should shorten the period of disability and decrease the number of cases of gonorrheal arthritis very materially. One should not discontinue the massage upon the disapearance of the gonococci, but continue it at less frequent intervals until all soreness and swelling have entirely subsided and the expressed fluid contains only prostatic secretion and spermatozoa.

The patients treated by prostatic massage from the beginning have in my hands had a more comfortable and I believe a shorter period of disability, and a greater freedom from nocturnal erections. A discussion of the involvement of the vesiculae seminales has been purposely avoided as their anatomical structure is so nearly identical with the prostate gland that we hesitate to attempt a differential diagnosis when the entire mass is swollen and tender, and the treatment is in no way different from that outlined in this paper.

DISCUSSION

Dr. Nagel: I can't let some of the statements made

in this paper go unchallenged, and I want to take up just a few minutes of time. There are some things in the doctor's paper that certainly want to be corrected, and I want to call his attention to the high prostatic involvement that he has when he says that he has fourteen cases of prostatic involvement out of fifteen cases of acute gonorrheal urethritis.

I wish to say to the doctor that if that is his percentage of prostatic involvement of acute gonorrheal urethritis, then it is high time that his treatment was being revised. A man who will sit back and allow one week's time to elapse for the gonococcus to spread from the meatus back into the prostate gland, and then start in and attempt to eradicate the gonococci from that system, with all the dangers attendant on such a condition—prostatic abscess, cystitis, involvement of the kidneys—with all the attendant invalidism, possible loss of life—a man who allows that high involvement certainly had better look to the revision of his treatment.

Dr. A. E. Mowry: I hate to take another moment here, but I think this is important. I've got a doctor under my care now, laid up with acute epididymitis. Another recent case was a man who had massaged his prostate and he developed a chill following an aseptic gonorrheal arthritis. I am awfully glad that Dr. Nagel made the point which he did.

Don't tinker with that prostate, because it doesn't get the results. If you have a diverticulum of the bladder and you empty that, you are simply emptying it and you are not curing it. There are possibly times with chronic cases when carefully performed massage may do some good, but don't make it a routine treatment, please. It is dangerous.

Dr. Baird: I once knew a doctor who, after reading a paper and having it leaped on like this was (and I think this is the valuable thing about any paper) and when they criticised his methods, he thanked them very cordially for agreeing with all that he had said.

Now I think my treatment of gonorrhea—of course I am not a G. U. specialist—doesn't differ from the ordinary treatment that is recognized as the proper treatment for gonorrhea.

Up until I began noticing this series of cases it had never been my habit, as it probably has not been yours, to examine the prostate unless there were some symptoms calling the patient's attention to that gland. This particular case came in on the tenth day. I hadn't seen him before. He complained of this prostatic pain, or the discomfort in the perineum. I very naturally examined the prostate and found it quite tender and after I had massaged the prostate gently he said, "By George, that feels better! I feel a lot better."

Now, then, that fellow felt better every time he came in and every time I massaged his prostate. It was followed by a sense of comfort, a sense of relief. Every case that I got after that I made it my business to examine that prostate. Every one of those fellows, with the exception of one, of those fifteen cases had exactly the same experience. Eight days was the earliest I had noticed it. Others run along from that on up to three or four weeks.

I haven't had any difficulty in any of those cases, although I may have in the future. I recognize the structure of the prostate gland, I recognize that there may be conditions where this treatment might be dangerous, but I also realize that there are a lot of cases of prostatitis, there are a lot of prostatic abscesses and cystitis that come because of the fact that the pockets in the prostate gland haven't been drained. You can only drain them in one of two ways—one by a surgical operation and the other by forcing the fluid out with your finger. I think if it is properly and carefully done the danger is very slight.

THE PHYSICIAN AND THE PROOF OF DEATH OR DISABILITY FOR THE INSURANCE COMPANY.*

CLIFFORD U. COLLINS, M. D.

PEORIA, ILL.

The increasing length of the blank forms for proof of death and disability furnished by the insurance companies, with the increasing amount of time taken up in filling in these blanks, led me to investigate and see if the insurance companies were not asking for more information than they were entitled to receive. For several months I have been examining insurance policies and blank forms of proof of death and disability, and have also had the legal phases of the question looked up by an attorney, in order to find out whether or not physicians were being imposed on by being asked to furnish the insurance companies more information than they were entitled to receive under their policies. The result of this investigation is my excuse for bringing this subject to your attention.

A life insurance policy is a contract between an insurance company or association and an individual in which the insured individual agrees to pay the company a certain amount of money each year, called premiums, for a number of years, and the company agrees to pay a designated beneficiary, or the insured's legal representatives, a sum of money upon the receipt of due proof of the death of the insured. All of the insurance companies or associations so far as I have been able to ascertain, specify that the proof shall be due and satisfactory and shall be presented to the head office of the company; but none of them require more than the *proof of death* in their contract.

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The principals of the contract are the insured and the company. The beneficiary is not a party to the contract at the time it is made, but if she elects to collect the insurance money on the death of the insured, she becomes a party to it and must comply with the terms of the contract. If she does not choose to claim the insurance money, she does not become a party to the contract and is not bound by it in any way.

The contract usually makes it clear that the beneficiary must furnish the proof of death and present it to the head office of the company, and the blank forms furnished by the company usually state that the proof must be furnished without any expense to the company.

The physician who attends the insured during his last illness was not a party to the contract at the time it was made, and never becomes a party to it. *Therefore, he is not bound in any way, nor at any time, by the terms of the contract or by the rules of the company.* Most of the companies have a sentence something like this at the top of their blank form. "This certificate MUST be filled in by the physician in his own handwriting." The use of the imperative mode is an outrageous piece of impertinence on the part of the companies. The insurance company has absolutely no right to say "must" to the physician. A request would be much more polite, and would much better conform to the conditions surrounding the preparation of the proof of death. Legal documents such as deeds, notes, depositions and affidavits are accepted by the courts in typewritten form if properly signed and attested, therefore the physician need not pay any attention to the peremptory command of the company, but may use his typewriter if it is more convenient and he so desires.

The physician is called upon by the beneficiary to furnish the proof of the death of the insured by reason of his position as family physician or medical attendant, and is supposed to be paid by the beneficiary for filling out the company's blank form and furnishing the proof. As the family physician and friend of the insured he is usually very willing to assist the insured's beneficiary in collecting the insurance money, and this friendliness and willingness have been taken advantage of by the insurance companies. Bearing in mind that by the terms of the contract the beneficiary is bound to furnish the proof of death only, it is rather amazing to see the questions that have been inserted from time to time in the blank forms furnished by the companies. Many of the questions have very little, if anything, to do with the proof of death, and some of them are manifestly designed to draw out information on which to base a refusal to pay the insurance money. Think of it for a minute! The family physician and friend of the insured and beneficiary is depended upon and paid by the beneficiary for furnishing the necessary proof of death in order to collect the insurance money; and then is asked questions tending to draw out information on which to base a refusal to pay the money. It seems to me that if the company seeks such extraneous information the better way would be to ask for it directly from the physician and pay him for it, rather than to seek for it in a circumlocutory manner by asking the beneficiary to procure and pay for evidence that may result in her failure to obtain her insurance.

In talking with an attorney for an insurance company not long ago and presenting for his consideration some of the points mentioned in this paper, he made the plea that insurance companies are called on to pay, and do pay sometimes, fraudulent claims, and these long blanks are not made with the idea of adding to the burdens of physicians, but for the purpose of protecting themselves against such fraudulent claims.

Admitting this statement to be true, and I do not doubt it, I still claim that the companies should only require from the beneficiary or claimant's physician the proof required by their contract or policy, and if they desire any further information, they should negotiate for it with the physician and pay him for it and not try to obtain it surreptitiously under the guise of proof of death or disability.

Many of the questions are inserted evidently by the actuary or statistician of the company, or head clerk of the fraternal association, to gain experience and information on which to compile mortality tables. For instance, questions like the following have nothing to do with the proof of death and are evidently questions of the class mentioned above, although they may possibly be designed, also, to obtain information at variance with the insured's application or the conditions of the contract.

"Was the last illness complicated with or induced by any previous illness or infirmity?"

"Were you the deceased's medical attendant

or adviser before the last illness? If so, when and for what disease?"

"How long had the deceased complained of the symptoms of the disease causing the last illness?"

Some time ago I had a patient under my care who died of appendicitis. When the company's blank form for the proof of death was brought to me I unwittingly answered a question like the last one. I looked up my records and found that the history of attacks dated back about three years. I accordingly wrote in "three years" as the answer. As the insured had had his policy only two years and had stated in his application that he had not had appendicitis, the company made my answer a basis for a refusal to pay the insurance money. As a matter of fact, the insured had not attempted any fraud. The attacks during the first year were very mild, and had not been treated or diagnosed. The insured did not know they were attacks of appendicitis. Since then I have been very careful to give the companies just what the contract called for, the proof of death and nothing else. That is all they are entitled to from the beneficiary according to their contract.

In order to be sure that I was interpreting the terms of the contract correctly with regard to the proof of death, I had an attorney of Peoria, Mr. Ren. L. Thurman, prepare a brief covering decisions on the subject by the Supreme Courts of the various states, which follows:

The insurance policy, as has been previously stated, is an agreement between the company and the assured and neither party thereto is bound by any terms or conditions not expressly stated in the policy. Practically all insurance companies, with the exception of some assessment companies, simply state that "due proof of death" or "satisfactory proof of death" be furnished by the beneficiaries, in no way specifying in what manner or by whom such proof shall be made.

The courts have construed these policies or contracts very strictly, and where there are any ambiguous terms or conditions they are always interpreted in favor of the beneficiary, for the reason that the insurance companies formulate these contracts and it is not to be believed that they would insert any conditions or terms that would be detrimental to them or leave out anything that would be beneficial; therefore, the courts of law have repeatedly held that these companies cannot ask more than facts establishing the death of the assured and may be confined to those facts alone.

We find in a standard legal publication, the *Cyclopedia of Law and Procedure*, in Volume 25, page 884, the following: "The requirement as to proof of death does not necessitate direct evidence, but only such proof or showing as ought to be satisfactory. The particulars as to immaterial matters or even the cause of death, where that is immaterial, need not be given."

If the insured does not, in this policy, contract to furnish a physician's certificate, and you will find that in the ordinary policies there are no such stipulations, the company has no legal right to demand the same, as was decided in the case of Taylor vs. Aetna Life Insurance Company, cited in 13 Gray (a Massachusetts case), at page 434, which states as follows: "Physician's certificate of the death is not an essential part of the proof of death unless expressly required by the policy or by the usage of the company made known to the plaintiff before he took the policy," and further, in the case of Sun Accident Association vs. Mattie Olson, cited in 59 Ill. Appellate Reports, page 217, the court says: "Where the policy was conditional that the loss was to be paid within ninety days after sufficient proof of death and cause of the same and the blank proofs furnished by the company contained a blank certificate to be filled out by the attending physician, which said physician refused to sign, that the contract did not require the beneficiary, under the policy, to furnish the certificate of the attending physician, but referred to the kind of proof required," and a further proposition was laid down by the Indiana Appellate Court in the case of the Life Assurance Company of America vs. Haughton et al., cited in 67 Northeastern, at page 950, that "the proof of the cause of death was not a condition precedent to the payment of the policy." In this case a life policy provided that the insurer would pay the insurance "immediately upon receipt of and approval of proof of the death or cause of death." It also stipulated that "the proof of death" should be furnished the insurer at its home office, within one year after the death of the assured, and should comply with the insurers' forms, the policy covering death from any cause. The court goes on to say "that the policy nowhere limits the liability of the company on account of death, for any specific cause, but by its terms agrees to pay the amount specified upon the death of the assured from any cause, upon proof of death. Taking the policy as a whole and construing the contract of insurance most strongly against the appellant (being the insurance company), as we must, we think that the first provision relating to proof of death and cause of death is so qualified by the latter that the inference is fair and reasonable that the parties intended as a condition of payment only that proof of death be made."

The answers to six questions by the family physician will give the company all the information necessary to prove the death of the insured. This is all the information that it should expect the beneficiary to procure and pay for from the family physician according to the terms of its contract.

1. Name of deceased in full.
2. Age at death. Residence.
3. How long have you known the deceased?
4. Place of death.
5. Date of death.
6. Cause of death.

The answer to the last question is not necessary to prove the fact of death. The company can get that information from the death certificate filed with the proper authorities, but I think most of us will be willing to aid it by answering the last question.

The answers to the above six questions signed and sworn to by the physician is all that the company is entitled to receive. Some question has arisen as to whether the insurance company should request the physician to go before a notary public and swear to the truth of the answers in his report. In all of the foregoing I have earnestly endeavored to be fair with the companies, and I am inclined to the opinion that the word "proof" in the insurance contract calls for a sworn statement in the presentation of the evidence of the insured's death. A sworn statement is an additional protection to the company against fraud and also protects the physician from the forgery of his name. I do think, however, that some companies have recently required too much when they have attached to their blank form a blank certificate to be filled by the clerk of a court of record to the effect that the notary public is really a notary public; but that does not concern the physician.

Bearing in mind that the family physician of the insured is acting voluntarily for the beneficiary, and is, presumably, paid by the beneficiary, it will be seen at once how incompetent, immaterial, and irrelevant are the answers to the following questions, which are all taken from the blank proofs of death furnished by insurance companies.

How long have you been his medical adviser?

Was he married or single?

Occupation at time of death.

Date of your first visit or prescription.

Date of your last visit.

Duration of the disease from the date of the first appearance of symptoms to the date of death, according to the history given to you.

Was deceased attended by any other physician during last illness? If so, state his name and address.

Was his health impaired by intemperance or any pernicious habit?

Was his death caused, directly or indirectly, by intemperance or any pernicious habit?

When and where did you receive your medical diploma?

How long have you practiced as a physician?

When did his health first become impaired?

Was his last illness complicated with or induced by any previous illness or infirmity? If so, state what and when.

Were you deceased's medical attendant or adviser before last illness? If so, when and for what disease?

Had deceased been attended or prescribed for by any other physician within the last two years preceding death? If so, when, by whom and for what disease or infirmity?

Have you ever heard of deceased being an inmate of, or prescribed for at any hospital, dispensary or public institution? If so, when and where?

Was death caused in any way by the habits or occupation of the deceased?

In regard to health and accident insurance the companies insure the individual taking out a policy against disability from illness or accident. Therefore, all they are entitled to receive from the claimant's physician is proof of disability. A very short blank like the following will give all the information required by the policy.

1. Name of claimant.
2. Age. Residence.
3. Cause of disability.
4. Duration of total disability (giving dates).
5. Duration of partial disability (giving dates).

The company is not entitled to receive from the claimant's physician, and paid for by the claimant, the information which is furnished by the answers to the following questions:

How long have you been his personal medical attendant or adviser?

For what disease, if any, did you treat or advise him prior to his injury?

Give date, duration and result of each treatment.

Was there any special cause, directly or indirectly, for the injury in habits or occupation?

Does he use alcoholic beverages or narcotics of any kind habitually?

Had he used stimulants of any character within twenty-four hours preceding this injury?

Was the injury for which he claims benefit caused directly or indirectly, in whole or in part by his drunken or immoral conduct, or as a result of his own wilful act, or the violation or attempted violation of any of the laws of the country or by reason of any disease, condition or injury existing at time of becoming a member of the order, which in whole or in part was the cause thereof?

I know that his disability was solely because of his having ....., (name of disease) of which he presented the following symptoms and clinical evidence.

I certify that the claimant, above named, is perfectly healthy and not the subject of chronic, recurrent or other ailment which could in any way have prolonged or complicated this disability, except.....

.....

I also certify that the sickness was not due to or complicated by any unnecessary exposure or contagion or infection, nor to any disease, directly or indirectly the result of injuries or surgical operations, except .....

Have you ever previously treated claimant for sickness of the nature for which he now makes claim?

What was your treatment in this disease?

In the foregoing I have endeavored to show that the usual blank forms furnished by the insurance companies for the physician are needlessly long and contain many questions that are irrelevant to the contract between the beneficiary and claimant and the insurance company. While the physician cannot be legally compelled to answer a single question, he is morally bound by his relation as family physician to the insured and beneficiary to furnish the proof of death or disability, and he is naturally desirous, any way, to assist his friends and patients to procure their insurance money. It is this natural desire that has caused physicians to submit to the ordeal of filling out these needlessly long blanks, containing so many immaterial questions, in their own handwriting. Physicians have also become accustomed to filling out blanks for the state such as birth and death certificates, and so they have submitted without much complaint to the gradually lengthening blanks furnished by the insurance companies. In the opinion of the writer it is time for physicians to refuse to furnish so much information, with the corresponding outlay of time and trouble, to the insurance companies *at no expense to the companies.*

What is the remedy? Simply give the companies the information to which they are entitled under their contract, and refuse to answer all other questions. A few years ago I adopted this plan. I expected a strong protest from the companies. To my great surprise not one blank has ever been returned. I have become convinced that the insurance companies know that they are not entitled to answers to the irrelevant questions that do not bear directly on the proof of death or disability. A very few agents have threatened to go to my patients and tell them that my refusal to answer the immaterial questions was holding up their insurance. I have then threatened in return to go to my patients and tell them that the agent sought to make me answer questions that had nothing to do with the proof of death or disability, but were designed to bring out evidence that they might use to invalidate the insurance. That generally settled the agents.

I have furthermore told beneficiaries and claimants, whenever it seemed necessary, that I was ready to furnish an attorney to bring suit against the company for the insurance in case the company refused pyament on the ground that these irrelevant questions were not answered. But I have never yet had a head office return one of these blanks to me. The nearest I came to having that experience was a few months ago. I refused to answer the question as to whether the insured indulged in the use of alcohol or narcotics. I considered it was the duty of the company to find that out at the time he took out his policy; and whether he did or not, had nothing to do with the proof of death required from the beneficiary under the policy. The company had no legal or moral right to demand that kind of evidence from me. So I answered the question as follows: "The answer to this question is incompetent, immaterial, and irrelevant." The head clerk of the fraternal association wrote me that I might know something about my profession, but I knew nothing about law, and that insurance would not be paid until I had answered that question. I wrote in answer that I would engage an attorney to start suit at once, provided he would refuse payment on the ground that I had not answered that question, and on that ground only. He did not take up the proposition.

So I am convinced that the companies know that they have inserted questions in their blank proofs of death and disability which are irrelevant and to which they are not entitled to an answer from the physician of the beneficiary or claimant under their contract.

I met a physician a few months ago who told me that he had had printed a blank form of his own which, when properly filled, contained all the information necessary to prove the death of the insured. It was very short and complete, and required very little time to properly fill. He had not had one returned.

If all physicians answer only those questions that bear directly on the proof of loss or disability, using a typewriter if they desire, and ignore the other irrelevant questions, they will save themselves a great deal of time and labor and probably cause the companies to materially shorten their blank forms.

DISCUSSION.

Dr. Munson suggests that this matter come before the Resolutions Committee of the State Medical Society, that some real steps may be taken so that this Society may protect itself or at least know its rights as the doctor has set them forth.

Referring to disability claim blanks, he advised keeping a record of the first blank that you fill out lest when you fill out the final blank you will have some errors whereby it may invalidate the claim of your patient.

Dr. Simpson, of Palmer, thought the proposition of insurance is just a gambler's proposition, and described a patient with walking typhoid fever, who could not collect a penny of insurance because he wasn't confined to the house. He never did fill out one of those proofs of death except in a spirit of resentment.

The Secretary: I think it has been my experience that the length of the blank has been proportionate to the goodness of the insurance company. Some of the leading insurance companies have their blanks down so that they ask very few unnecessary questions, and that is true both of the life insurance and the accident, but fraternal companies especially have a blank that has almost no end to questions. I saw one the other day in which even after getting statements from the physician and the undertaker and the mutual friends, they had to have a statement from the minister of the insured before it was complete.

Dr. Sala: In order not to have the paper go by the wayside, I would move you that it be referred or reported in the A. M. A. and that Dr. Collins be appointed a committee of one to bring it before the Resolutions Committee of the Illinois State Medical Society for some definite action.

Seconded.

Dr. Clark: Mr. Chairman, the Resolutions Committee of the Illinois State Medical Society have already reported for this year and been acted upon by the House of Delegates, but if Dr. Collins will get those resolutions in shape for next year, it can be acted upon then, and if they had been handed in this morning by nine o'clock it would have been acted upon by the Resolutions Committee this year.

In regard to these insurance blanks, if any of you have never run against one sent out by the Illinois Commercial Men's Association, you don't know anything about blanks. They have a preliminary one as long as that curtain and a secondary one, and they ask you as many questions about yourself as about the patient, and if there is anything under heaven that any body ever thought of that they left out of that blank, I don't know what it is. They want to know the treatment; I write "orthodox" and it goes through and doesn't come back.

Dr. Sala's motion is seconded and carried.

The Chairman: It will be referred to the proper committee. Dr. Collins will close the discussion.

Dr. Collins: I don't care to say anything further.

CESAREAN SECTION.*

H. M. Orr, M. D.

LA SALLE, ILL.

Like many other operations that are performed on the human, that of abdominal section for the delivery of the unborn child, which necessitates delivery through this route by disease or anatomical deformity, to be classed as a Cesarean Section is a misnomer.

The records of this operation reach back to the ancients. History states that it was compulsory to remove the unborn child from the mother at the time or immediately after death by most of the people of Asia.

The impression had gone forth that Caesar made his entrance by this manner; which Caesar, history does not mention. Of the greatest of all Caesars, Julius, no mention is made of this character of operation. The family of Caesar was prominent in Rome, before the birth of Julius Caesar, so therefore, it is possible that some of the Caesars may have made their entry into the world by this means.

After the advent of the Christian Era, the practice of medicine and surgery descended to such a low mark through fear and religious superstition and the class of individuals who were entrusted with the care of the sick and injured, were of such a character, making an operation of this kind out of the question. The alibi used that covered a multitude of sins of omission was the excuse that, anything out of the ordinary beyond their comprehension and understanding was the will of God that made it so. This condition existed through centuries even to so late a date as the delivery of the unborn by the use of forceps.

Simpson, whose reasoning and deep thought conceived the idea of delivering children by this means, met opposition, as the operation with the

*Read before the Sixty-seventh Annual Meeting of the Illinois State Medical Society, Bloomington, May 9, 1917.

use of instruments was classed as a sacrilege and it was the belief in those fairly modern times, this was a direct interference with the will of God. The same reason compelled Lister to go to France, for the purpose of experimenting in the use of animal ligatures as a buried suture. With the advent of a broader view and less religious interference an attempt was made where an anatomical condition existed, making it impossible to deliver the child in any other way, to do so by this means.

During the time of Ambrose Parè, his attempts were fraught with disaster to the mother, owing to the fact, it was believed at that time, the use of ligatures to close the uterine wall was impossible. It was believed the contractions would prohibit this procedure. Infection was the cause of a high mortality and owing to the belief of the inability of the closure of the uterine incision, which was followed by hemorrhage, together with infection, this operation was abandoned until the time of Porro, who in 1876 attempted a delivery in this way, to overcome the hemorrhage and infection. He performed a hysterectomy with delivery and fastened the stump of the uterus in the wound. This operation was objectionable, for the reason that it produced sterility afterwards.

Sanger, of Leipsic, made the first attempt in 1882, to close the incision in the uterus with multiple sutures, previous to the closure of the abdominal wound. This really was the beginning of the success of this operation and from then on it took its place in surgical obstetrics. Asepsis and antisepsis have developed to such an extent since that time that it can be as safely done as any ordinary abdominal operation, in a modern equipped hospital with trained assistants.

The operation of craniotomy every time I have been called upon to do it, has not only been a disagreeable task but I have always approached it with repugnancy. This feeling, together with the destruction accompanied by craniotomy and the injury incurred to the mother during its performance, have spurred me on to the attempt of delivery through abdominal incision, where I believed both mother and child could be saved with less danger and injury than in the performance of a craniotomy.

While the number of times I have been called upon to perform this operation is not large numerically, the success has been sufficient to convince me that this operation has a rightful place in our category, and should receive more consideration and study than it has in the past.

I wish to recite our experience and give a record of the following cases, which have been operated upon by myself and colleague, Dr. W. W. Greaves, at St. Mary's Hospital since March 9, 1913, to January 24, 1917. Five cases in all.

Case 1—Mrs. J. W., admitted March 9, 1913; healthy appearing woman in the early stages of labor. Dr. Balenseifer, her physician, on examination found a deformity of the pelvis and had her admitted to the hospital for consultation and treatment. The examination showed, owing to a bridge of bone passing from the rami, a shortened anterior-posterior diameter of the pelvis in the neighborhood of three inches. Delivery through the normal route was impossible. Analysis of blood, urine and blood pressure were normal. After reviewing the situation I advised an abdominal section, so that we could save both mother and child. This was done, she made an uninterrupted recovery and she left the hospital three weeks later with child.

Case 2—Mrs. T. E., March 11, 1913; findings almost identical with case one. First stage of labor, abdominal section, recovery uninterrupted. Left hospital three weeks later with child.

Case 3—Mrs. W. G., entered March 27, 1914. Detail work and blood pressure showed nothing of interest. Examination revealed a previous involvement of the left hip joint, with a lessening of the contour of the pelvis. This gave evidence of being caused by rickets in the girl's infancy. It shortened the lateral diameter of the pelvis so that her child could not be delivered with instruments. The mother made an uninterrupted recovery. The child died four days after birth from some unknown cause.

Case 4—Mrs. D., admitted November 26, 1916. Early stage of labor, presentation transverse, left hand and forearm presenting with prolapse cord. She had been delivered in 1914, with instruments. The delivery was quite difficult on account of a pelvis of small diameter. Operation performed shortly after her arrival at the hospital. Four days afterwards she had several chills, with high temperature, which was followed by a cyctitis. Cultures showed it to be Colon B. Urotropine was given in ten grain doses every four hours, a vaccine was made from the culture and given in addition with the urotropin. Recovery was delayed causing her to remain in the hospital six weeks after operation. She left with her baby at that time, in good condition.

Case 5—Mrs. J. C., eight and one-half months pregnant, was seen by the writer January 24, 1917, in consultation with Dr. Greaves, who had taken charge of her a few days previously. She had severe edema of the face and extremities. Body and limbs would pit almost any place on pressure. The

examination of the eyes revealed a retinitis with some areas of the retina detached. The power of vision was reduced to almost total blindness. Blood analysis showed a secondary anemia, with deficient and irregular reda, with a leucocyte increase of over 12,000. The analysis of the urine showed albumin of 6 per cent with granular and hyaline casts. The woman looked and was in a serious condition, with a doubtful prognosis. She was receiving routine treatment for her condition, consisting of a milk diet, saline and hot packs in an attempt to relieve the system of the accumulated fluid. At midnight of the 24th she had a severe uremic convulsion; a second was taking place when I reached the hospital. The edema of vagina and vulva was such, version was almost impossible; auscultation showed the child was living. An abdominal section was advised and done, shortly after my arrival at the hospital. She remained as a patient for ten weeks after the operation and was discharged. At this time the dropsical condition had disappeared. But she still showed 1 per cent albumin with casts. At the present time she is up, out and around. The vision has improved, but has not regained its normal condition.

The report of these cases, while it is small in number, shows that this operation in proper hands and under proper surroundings is not a dangerous one. It is my belief that less injury is received by the mother than a severe and difficult instrument delivery. And it should receive acknowledgment and consideration from the profession.

I hope though it will not be abused like many other operations have been, by incompetent operators, who are neither equipped in skill or surroundings to assure the mother precautions and safeguards that are her due.

DISCUSSION.

(Abstract)

Dr. Kelso (Bloomington) thought it strange that this operation which is not a difficult one, if done under proper conditions and by an abdominal surgeon, should be so long in winning the favor of the medical profession. Women are being mutilated and infants being sacrificed today because of antiquated obstetrical methods, pending the time when this modern, up-to-date, Cesarean method should be accepted.

But if this operation is done under septic conditions or in the presence of sepsis, whether due to faulty manipulations during an impossible delivery or whether it is due to an infection of the pelvis or the vagina, it is a very dangerous one and not to be performed without serious consideration.

He has done this operation for eclampsia, for fixation of the uterus, for deformities of the outlet, and also for pernicious vomiting late in pregnancy, but believes that fixation of the uterus should never be done in women who expect to bear children.

Dr. Windmueller (Woodstock) thought that in this discussion as well as in the paper, the indications for this operation were not made any too clear, and he advocated it in all cases of placenta praevia and in cases of complete atresia of the vagina as well as disproportions of the pelvic outlet; also in cases of eclampsia.

He has done seven with a mortality of one, which was a case of placenta previa. In that case the child lived but the mother died soon after operation from shock.

He even advised the operation in all cases requiring application of high forceps, as he considered it safer.

Dr. Maley (Galesburg) considered that the woman who went through a cesarean section was in much better condition and made a much better recovery than the woman who went through a hard labor. His first experience resulted in a live baby and a live mother, after instruments had been applied and used for almost two hours with no success. The mother reported finally that she had had two or three previous experiences in labor where there had been craniotomy and the infant had been destroyed.

In uremic convulsions also the shock to the mother is so much less from a quick Cesarean section than from any other slow attempt to dilate and deliver the patient forcibly.

Dr. Van Hoozen sympathized keenly with the writer of the paper, having had four Cesarean sections and four high forceps cases in the past year; the indications being almost identical in each.

In the high forceps cases two of the children were born dead. They were very large, strong, splendid children; both died as the result of the use of high forceps. In two of these cases of high forceps the women had complete laceration of the perineum and although they were as carefully repaired as possible at the time, neither one of them resulted in a perfect result and both of them had to have an operation—one a couple of months afterwards and the other six months later—for perfect repair.

In all the cases of high forceps the convalescence was long and the life of the baby in the two cases where the baby was born alive, was somewhat jeopardized during the first two weeks by convulsions.

In the Cesarean sections, although the indications were well marked and the patients in all of the four cases were not as good risks in every one, the baby was born crying, no resuscitation was necessary in any of the cases and the mothers were very well able to leave the hospital at the end of two weeks. One of them stayed (because she lived out of town) a little longer than two weeks. Convalescence was complete in two weeks.

Dr. Brow (Sycamore) complimented the writer of the paper for stating emphatically the conditions under which the Cesarean section ought to be done. Some men have told us not only in this State Medical

Society but in any other medical societies that the Cesarean section should be done for placenta previa, eclampsia and under all sorts of indications.

He emphasized that a Cesarean section should not be done except for well marked indications, viz. contracted pelvis, *not* for eclampsia and *not* for placenta praevia.

In a practice of medicine and obstetrics of over forty years he had delivered over three thousand women without meeting either placenta praevia or eclampsia. While willing to admit that a Cesarean section would be preferable to very much high forceps operation, the man who can't do a high forceps operation can't do a Cesarean section and one Cesarean section means a Cesarean section every time the patient is pregnant afterwards with the probability of rupture of the uterus finally and death of the patient.

Dr. Munson warned against operating in the home. Only the best surrounding conditions should be acceptable to begin a Cesarean section.

But little anesthesia is required. He prefers ether vapor, perhaps beginning with gas.

Dr. Christy (Quincy) noted that the operation on a woman who has been in labor for four or five days after repeated attempts at forceps delivery have been made gives nearly one hundred per cent mortality due to infection and generally those cases are undertaken in country homes.

In another case and to save the patient from the misfortune of repeating the experience he performed the Porro operation, the patient making a very beautiful recovery.

Dr. Orr (closing discussion): When I received the invitation from Dr. Finch to take part in this program, I concluded that it was either to renew an acquaintance that started twenty-eight years ago or else he was scarce on material. I am glad that the discussion has been brought about by this paper—I wrote it very hurriedly and possibly haven't given it as much thought and embraced as many angles as I should have done but I am glad that it has received the attention that it has.

You have heard the discussion pro and con. I want to say here and now that any woman who is in labor is entitled to and the physician in attendance has neglected his duty unless he learns everything he can from her. He is in a position where he has time to make measurements and find anatomic deformities. He can take an hour or two hours or a day if he wants.

I am not in favor of indiscriminate removal of children by the abdominal section. I want to condemn it, and of doing a Cesarean section for placenta praevia or transverse presentation in a a woman with a large vagina and a large pelvis. If I did so I would think I did that woman an injustice—put her through an unjust operation.

I want to warn the gentlemen here against hasty operations of this character.

ONE STEP FURTHER IN THE TREATMENT OF ACIDOSIS IN CHILDREN

H. C. BLANKMEYER, M. D.,
SPRINGFIELD, ILL.

I am prompted to say, at least in part, what follows by the assumption that the "acid intoxication," known as "acidosis," better perhaps called "acidemia," is represented by the "acetone bodies" proper.

The acetone question has gone through some remarkable phases. At first it was the carbohydrates that were looked upon as the source of acetone and it was to the abnormal intestinal decomposition of carbohydrates that the formation of acetone substances was supposed to be due. This view was soon discarded upon its being shown that acetonuria is not increased by carbohydrate food, but that on the contrary it is somewhat diminished. The acetone was then thought to be derived from proteid, and for a long time this doctrine remained unassailed, the only matter for dispute being whether all varieties of proteid were capable of furnishing acetone or whether this could only be formed by the destruction of the body proteids. What appeared to be an important confirmation of the view was attained when acetone was split off from proteid by treatment with strong acids in a test tube. But although it can not be disputed that small quantities of acetone may arise from proteids inside the organism, and although new investigations show that acetone can arise from the disintegration of lucein, this process is certainly not an extensive one and cannot play any important part in pathological acetonuria.

The amount of acetone bodies is often so large that the quantity of proteid disintegrated and measured by the nitrogen in the urine would not by a long way suffice for the formation of it, even if one made, without doubt, the false assumption that all the carbon of the disintegrated proteid was transformed into acetone bodies. Recently, that is within ten years, the doctrine that acetone bodies originate out of fatty acids has come into existence. This doctrine was at first advanced only with great caution and difference. It has now fully established itself and a revision of all the known facts about acetonuria shows that this theory is the one with which they chiefly accord. There is one other point of view that must be

considered. At first it appeared that acetone and aceto-acetic acid on the one hand and oxybutyric acid on the other had quite a different significance and perhaps also a different origin. But now all investigators have come to the conclusion that the three bodies form a simple series, of which oxybutyric acid is to be regarded as the first member and the one from which aceto-acetic acid and acetone only arise. We have no longer any justification for regarding any one of these bodies apart from the rest; we must consider them at the same time and class them under the common name of "acetone bodies."

We do not yet know which fatty acids furnish the material for the formation of these bodies. The lower fatty acids may certainly be indicated, although to the higher fatty acids a share in the process may be assigned. In the latter case, however, the part they play is limited to the extent that they are capable of being split up in the body into chains of the lower fatty acids. The immediate material from which the formation of oxybutyric acid arises appears to be either butyric or acetic acid. As this rapidly leads us into the domain of chemical hypothesis, I will say no more about it relative to that phase. For practical purposes we may distinguish three stages in the excretion of acetone bodies. They cannot, however, be very sharply marked off from one another:

First Stage—Only acetone in the urine. The quantity varies from the normal limit of five centigrams to five decigrams. Acetone is also given off in the expired air, often as much as, and even more, than in the urine.

Second Stage—Aceto-acetic acid is also present in the urine, and the latter therefore turns red upon the addition of aqueous ferric chlorid. This reaction usually occurs when the daily quantity of acetone excreted in the urine has reached four decigrams. When five decigrams is exceeded one seldom fails to find aceto-acetic acid.

Third Stage—Oxybutric acid occurs in the urine in addition to acetone and aceto-acetic acid. Its presence may most always be shown when more than one gram of acetone occurs in the 24 hours urine. When the excretion of acetone bodies once exceeds these lower values the oxybutyric acid begins to predominate more and more. The acetone in the urine therefore only gives a true measure of the whole amount of acetone bodies present when the acetonuria is slight; when it is more marked this means of measurement fails, since the curve of oxybutyric acid rises much more steeply than that of the acetone. A quite considerable portion of the acetone never reaches the urine; the substance being extremely volatile, it evaporates in the lungs from the blood and gives the characteristic odor to the breath.

It has already been mentioned that oxybutyric acid is to be regarded as the primary acetone body. Its precursors, the fatty acids, are completely used up in the normal organism. When this does not happen, the acid substances themselves appear in the blood. The normal body assumes the role of satisfying large quantities of acid and so of protecting itself from the danger which a diminution of the alkalinity of the blood and tissues would entail. If there is not enough preformed alkali at disposal this is brought about by ammonia. A large part of the ammonia which is set free by the breaking down of the proteid molecule attaches itself to the acid and is thus prevented from passing over into urea. We find, therefore, that whenever abnormal quantities of acid arise in the body the relation of urea to ammonia in the urine is altered. In the normal urine, 3 to 5 per cent of the nitrogen exists in the form of ammonia, and about 80 to 85 per cent in the form of urea. With the production of an acid intoxication this relation is altered so that 20 to 25 per cent of the nitrogen may appear as ammonia, while only 60 to 70 per cent remains over for urea. Between this extreme degree of urinary change and the normal, the possible intermediate stages actually occur. There are, it is true, other factors on which the excretion of ammonia depends, but they are of much smaller significance, and we may, therefore, justly regard the excretion of ammonia as an indication of the extent of acid present in the blood, provided that alkalies are not at the same time being administered medicinally. From the quantity of ammonia ascertained, it is allowable to come to a conclusion with regard to the approximate quantity of oxybutyric acid which is being excreted in the urine at the same time; thus:

0.5 to 1 gram of ammonia per day is normal.

2 grams of ammonia correspond roughly to the excretion of 6 grams of obybutyric acid.

5 grams of ammonia correspond roughly to the excretion of 20 grams of oxybutyric acid.

8 grams of ammonia correspond roughly to the excretion of 6 grains of oxybutyric acid.

The neutralization of the acid by the combination of ammonia has, however, its limits. Only a certain portion of the nitrogen arising from the breaking down of proteid can be set free for disposal as ammonia. If the production of acid continues with undiminished vigor, then the abnormal amount of acid must be neutralized by the fixed alkali of the tissues. This is recognized most plainly in the case of calcium and magnesium, as first demonstrated by F. van Ackeren and confirmed by the well conceived experiments of Gerhardt and Schlessinger. This, then, should at least in great part explain the lowered alkalinity value of the blood in the cases in question, which I should like to have considered the main point. The surcharging with acid is the most important and decisive factor, with no special variety of acid indicated. In consideration of these facts, which are not disputed, I believe, the acid theory shows itself not to be sufficiently far reaching. Its limitations at once suggest that attention should be directed to the nature of the poisonous substance. For a long time it was taught that oxybutyric acid was not particularly toxic; Herter and Wilbur have proven this view incorrect. Oxybutyric acid is much more poisonous than its actual acid value would lead one to suppose. We must, therefore, ascribe at least a certain part of intoxication to the specific poisonous effect of this acid. This does not, however, explain everything. We are not yet acquainted with the entire number of chemical substances which are formed as intermediate products in the breaking down of proteids and fats in the organism and we do not know whether other poisonous substances which possess some significance may not be found amongst them. It seems to me in the light of this view we must allow that both the nature and quantity of acid formed are of equal significance and contribute an equal share in impressing their stamp on the clinical form of the eventual autointoxication. (Van Noorden.)

If this conception of the disease in question is the correct one it appears that our helplessness when confronted with it, is quite inexcusable. We have all seen the fatal termination in true non-diabetic acidosis after doing everything known to us. At times it seems nothing is of benefit, regardless of our procedure. We have given infusions, subdermally, intravenously, intracranially, with equally unsuccessful results. Even the duodenal tube has not proven to be the thing. It occurred to me the fault may possibly lie in the remedy. So with a possible chance of finding an effective remedy it was my intention to titrate several alkaline saline solutions against a solution of oxybutyric acid of known strength to determine the least amount of neutralizing agent needed in a given case as indicated by the ammonia content of the urine. This seemed a simple procedure until after I had combed the United States for a small quantity of the acid. This I was unable to obtain anywhere. I then decided to use aceto-acetic acid and estimate my results in terms of acetone. Again I was disappointed in being unable to secure the reagents. This left me no alternative but to offer you the next best thing by way of the chemical reactions involved and present a theory only. The alkaline acetates could not be used on account of the resulting acetic acid. The same holds true of the alkaline citrates. I have therefore chosen among the remaining salts of an alkaline reaction the following:

Sodium bicarbonate.

Potassium bicarbonate.

Calcium hydrate.

I find chemically it would require 84 grams of sodium bicarbonate to neutralize 104 grams of oxybutyric acid. Likewise I found it will require 100 grams of potassium bicarbonate to neutralize the same amount of that acid. In a similar manner it can be shown that it will require but 37 grams of calcium hydrate to accomplish the same result. This is less than one-half the sodium bicarbonate and about one-third the amount of potassium bicarbonate needed. It is possible that the by-product of carbon dioxide in the two former reactions might explain our limited success with infusions of those salts, for this amount of carbon dioxide being generated in the blood stream cannot be anything but harmful. There is no such end-product with calcium hydrate. The most common form of calcium hydrate solution is the U. S. P. Lime Water, clear, color-

less liquid, without odor, an alkaline taste and a strong alkaline reaction. The only chemical impurity it is liable to contain is the carbonate, the solubility of which is increased in the presence of ammonium salts, which, as you know, are always present in the blood in acidosis.

Officinal lime water is an aqueous saturated solution containing not less than 0.14 per cent of pure calcium hydrate. One hundred millilitres of this solution will neutralize 0.39 grams of oxybutyric acid. As the concentration of aceto-acetic and oxybutyric acids seldom rises above 1.5 per cent, it would require but 0.54 grams of calcium hydrate or 387 millilitres of U. S. P. Lime Water for neutralization in an ordinary case—a quantity quite easily administered by infusion in the course of twelve hours.

By the addition of 35 per cent of cane sugar to lime the solubility of the latter is increased forty-six times. Cut this in two for lactose and we have a delightful margin to figure from. Thus a 5 per cent solution of lactose would take up 0.46 grams of calcium hydrate or about three times that of ordinary lime water. As stated before, approximately four hundred millilitres of U. S. P. Lime Water would be required in an ordinary case of acidosis and by combining 5 per cent lactose—not an objectionable feature, you will admit—we could give nearly enough at one infusion.

However, it is not necessary for us to use lime water, since the dried calcium hydrate is readily procurable on the market in a pure state. The sterile lactose solution can be made in a few minutes, to which the required amount of alkali might be added. It is quite as free from micro-organisms as the center of the container holding the sodium bicarbonate which we all use in making our infusions. It will not require the tedious passing of carbon dioxide gas through it to reduce the contaminating carbonate to the bicarbonate before giving the infusion, which remedy has not to date proven very effective.

I regret exceedingly I was unable to carry out my original experiments. I am also sorry I cannot give you any statistics, as my service at the hospital affords but few cases of acidosis. I may get some facts during the coming summer. All I can possibly do at this time is to offer you what seems a reasonable suggestion.

"LEST WE FORGET," OR DR. CRAWFORD W. LONG, THE FIRST ANESTHETIST.*

CHARLES B. JOHNSON, M. D.
CHAMPAIGN, ILLINOIS.

> His life was gentle, and the elements
> So mix'd in him, that Nature might stand up
> And say to all the world, *this is a man.*
> —Shakespeare.

We live in a world of forgetfulness! Not a thousand miles from here a certain surgeon, after an operation, forgot to remove a sponge from where it was no longer needed and that there were untoward results goes without the saying. One of these was a long, tedious and incomplete recovery; another was a harassing mal-practice suit.

I once knew a doctor who had for a patient a six-months-old babe and who, in prescribing for it, forgot and adapted his treatment to a two-fisted six-footer. Again there were dire results, and among these could be numbered one more innocent needlessly sacrified; and one more mother's heart-strings ruthlessly torn.

Six centuries ago lived Theodoric, an Italian surgeon, who before operating on his patients had them inhale the fumes of powerful narcotics. A sponge was for a time left in a saturated solution of opium, henbane, Indian hemp, mandragora and other sedatives, next it was dried in the sun and finally sealed up in an air-tight container. Thus was prepared the classical "spongia somnifera," or in plain English, sleeping sponge.

When about to be used the sponge was removed from its place of keeping, boiling water was poured upon it and the fumes arising were inhaled by the patient about to undergo an operation.

Such was the medieval method of producing anesthesia, and while it was not as convenient nor as efficient as our modern method, yet it unquestionably prevented much suffering that the surgeon's knife would otherwise have inevitably caused.

Unfortunately the successors of Theodoric, like ourselves, lived in a world of forgetfulness and the sleeping sponge was first neglected and then forgotten with the result that for more than five hundred years mankind was compelled to endure the tortures of the surgeon's knife.

*Read at the sixty-seventh annual meeting of the Illinois State Medical Society, at Bloomington, May 10, 1917.

One hundred years ago lived Sir Humphrey Davy, a world-famous chemist, a great scientist and an all-around genius. Sir Humphrey did much in the way of elucidating the nature and properties of gases and more especially that of nitrous oxide, or "laughing-gas," as it was popularly called, from its tendency to produce in some persons uncontrolable fits of laughter.

This gas he not unfrequently inhaled himself; with it temporarily relieved a severe headache and on another occasion mitigated the tortures of a badly inflamed tooth. These and similar experiences caused Davy to say: "As nitrous oxide in its extensive operations, appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place."

These pregnant words of one of the world's greatest scientists were spoken in 1799, but unfortunately they fell on deaf ears and were soon forgotten; for Sir Humphrey Davy, like Theodoric, lived in a world of forgetfulness and his most important, but unheeded utterance, was another instance of good seed falling on stony ground.

The outcome was peculiar; for instead of being utilized on the medical side nitrous oxide was exploited on the amusement side and came to be, and for nearly fifty years remained, a mere plaything; and showmen were prompt to avail themselves of it to amuse their audiences. Sixty to seventy years ago the itinerant showman was deemed a back-number who did not invite volunteers to come forward and freely inhale this agent for the delectation of the remainder of the audience. One of my earliest recollections is that of seeing men go forward and put their mouths to some kind of bag of whose nature and purpose I of course had no conception.

In a little time the inhalation of laughing gas for amusement and exhilaration passed from the hands of the showmen to that of the laity and parties given for this purpose came to be popular with young people of both sexes. Unfortunately, however, for its popular use, nitrous oxide rested under the handicap that for its preparation a special apparatus was needed.

Early in the nineteenth century it was ascertained that the inhalation of sulphuric ether produced effects not unlike those of nitrous oxide, and for popular use the latter agent was promptly replaced by the former, and gatherings, where it was exhibited, soon came to be called "ether frolics."

While, as before noted, ether frolics were usually given under the auspices of young people, yet practically no one was barred from attendance. Consequently the preacher, the teacher, the doctor and the village squire were not infrequently present and interested spectators and oftentimes amusement-producing participants as well.

Of the medical men who for long years attended and participated in these ether frolics some must have been endowed with acute powers of observation. But however this may have been, nearly a half century ran its course before it was given to one of these to sense the anesthetic possibilities of ether.

Figuratively speaking, the sower had long been abroad in the land, but as year followed year, as decade succeeded decade, his seed all fell on stony ground. At last, however, the hour struck and some of the seed of the long-patient sower fell on good ground. This good ground was the mind of a young physician. This young physician was Dr. Crawford W. Long, who after being a careful observer and participant at sundry ether frolics, became impressed with the belief that ether could be utilized for abolishing pain during surgical operations.

A participant in some of these ether parties given in and about Jefferson was a young man by the name of James M. Venable, who had on the back of his neck two small cystic tumors that he was anxious to have removed, but dreaded the pain their excision would necessarily incur.

It was under these circumstances that young Venable consulted Dr. Long, who suggested that the patient inhale ether with the hope that the pain of the knife might thus be gotten rid of.

Accordingly on March 30, 1842, some ether was poured on a towel and when young Venable had inhaled what was deemed enough, Dr. Long excised one of the tumors and meantime the patient experienced no pain whatever. Thus was the little village of Jefferson, Georgia, put on the map; thus was March 30, 1842, made memorable in the annals of medicine; thus was a young physician of 26 made forever famous. All because at this place, at this date, Dr. Crawford W. Long for the first time in the world's history produced complete surgical anesthesia.

Two months after the first operation, namely,

on June 6, 1842, ether was again administered to Venable and the remaining cyst painlessly removed.

On September 9, 1843, Dr. Long removed three cystic tumors from the head of Mrs. Vinson. One of these was excised under ether and without pain; the remaining two *without* ether and consequently *with* the usual pain.

January 8, 1845, two fingers were amputated for a negro boy and in one of these operations no ether was given and the patient experienced much pain; in the other ether was given and the excision was painless.

In operating on the negro boy ether was withheld in one case and not in the other; and likewise ether was given to Mrs. Vinson when one of her wens was removed and not in the case of the other two, for the double purpose of convincing himself (Dr. Long), the patient and any bystanders who might be present, that ether, when properly given, abolished pain in surgical operations; and furthermore, to convince any one who might be interested that the insensibility induced was due to the ether inhaled and not to hypnotism unconsciously induced by the operator. For, be it known, that in that particular period hypnotism, mesmerism or animal magnetism, as it was variously called, was a popular vogue and by many was thought to be able to work almost miraculous things.

Indeed, under accomplished mesmerists complete insensibility had, in more than one instance, been induced, and operations painlessly performed.

Something more than two years after Dr. Long began investigating the possibility of surgical anesthesia, another young professional man became interested along the same line. This was Dr. Horace Wells of Hartford, Conn., who, having observed that a certain man after inhaling nitrous oxide, received a skin abrasion without knowing it till afterwards, conceived that this agent might be used for the painless extraction of teeth.

It so happened that Dr. Wells was in position to try out his conception on himself; for he had a badly inflamed tooth that required pulling. To put the matter to the final test, the aid of a brother dentist was secured who, after Dr. Wells had inhaled what was deemed a due amount of nitrous oxide gas, pulled the diseased tooth without inflicting pain.

With this experience on his own person, Dr. Wells at once began the use of gas in his dental practice and with such success that he later removed to Boston, where he could have a larger field for the exploitation of his newly-found panacea in tooth pulling.

Finally through the influence of friends, Dr. Wells was given an opportunity to demonstrate what he had discovered before the faculty and students of Harvard Medical College in the amphitheater of the Massachusetts General Hospital. But unfortunately, owing to the fact that his apparatus was defective, or that he gave too little of the gas, his attempted demonstration was a miserable fiasco, and as he turned to leave the amphitheater and passed out of its door, the catcalls, hisses and derisive laughter of the heartless students followed him.

This failure so disheartened Dr. Wells that he dropped his efforts in the direction of producing painless surgery, and later still, abandoned the practice of dentistry and embarked in other business.

About this time a third young professional man came to be interested in the problem that Dr. Wells had lost heart in and given up. This was Dr. Wm. G. T. Morton, first a dental student and later a partner of Dr. Wells and later still a medical student under Dr. Chas. T. Jackson and a matriculant of Harvard Medical School.

Here a word relative to Dr. Jackson who was no ordinary man in attainments. He was a scholar and after graduating in medicine at Harvard, spent two years in Europe visiting the largest hospitals and seeing and hearing the great masters of the profession. After returning to Boston he practiced for a time, but soon accepted the chair of chemistry in Harvard and continued his studies along scientific lines, and among other things, became especially well versed in geology and mineralogy.

As said above, Dr. Morton came to be greatly interested in laughing gas and more especially in the property it possessed of abolishing pain; and, as was natural, he, from time to time, reported progress to Dr. Jackson, his preceptor, and at whose house he made his home. One day Dr. Jackson after learning of some of Dr. Morton's experience, said to him, "Try sulphuric ether." Dr. Morton was energetic, resourceful, had initiative and was moreover persistent. Consequently, a suggestion such as Dr. Jackson's was

most emphatically a case of seed falling on good ground and the chances were it would spring up and bear a hundred fold.

Fortune favored Dr. Morton, for not long after receiving Dr. Jackson's suggestion, a patient came to him with a badly diseased tooth that he wanted out, but could not bear the thought of the dental forceps. The man's name was Eben Frost, and he said to Dr. Morton, "Can't you give me something to ease the pain when you go to pull it?"

"Yes, I certainly can," replied Dr. Morton, and pouring some ether on a towel, he had the patient inhale this freely, and when fully under the influence, the tooth was extracted without the patient realizing what had been done till afterwards.

That Dr. Morton was delighted goes without the saying, but his efforts had only begun. He experimented with ether in various ways. Tried it upon a favorite dog, and one day when all alone, climbed in his dental chair, poured some ether on a towel and began inhaling it. Realizing that he was about to become unconscious, he looked at his watch and noted the time, then continued the inhalations, and after a time roused up and looking at his watch again, found that all had been oblivious for about five minutes.

It so happened that when in the previous year, Dr. Wells had his mortifying failure in the amphitheater, Dr. Morton was present and no doubt profited thereby. At any rate, he, like Dr. Wells, sought and obtained an opportunity to demonstrate the power of ether to produce surgical anesthesia.

Unlike Dr. Wells' fiasco, Dr. Morton's demonstration turned out to be a well-acted drama from first to last. The date was Oct. 16, 1842; the place the amphitheater of the Massachusetts General Hospital; the chief actors, other than Dr. Morton, Dr. John Collins Warren, Dr. J. Mason Warren, Dr. Henry J. Bigelow and Dr. George Hayward, all accomplished surgeons of large experience; the audience was a number of visiting physicians and the medical student body of Harvard University.

When the stage was set and the curtain drawn, so to speak, Dr. Morton appeared at the psychological moment and proceeded to anesthetise the patient, a man by the name of Abbott. In a few moments Dr. Morton turned to Dr. John Collins Warren and said, "Doctor, your patient is ready." The operation was not a simple one and consisted in the removal of a tumor from under the patient's jaw where it proved to have unlooked for attachments. At the conclusion of the operation, during which the patient experienced no pain, Dr. Warren turned to the audience and said, "Gentlemen, this is no humbug."

Thus ended as dramatic a scene as ever was staged for or by the medical profession. The Massachusetts General Hospital was the largest and best equipped institution of its kind in the country; and Dr. John Collins Warren, the operator, was chief surgeon to this hospital, had an international reputation, was a nephew of Dr. Joseph Warren, who fell at Bunker Hill and hence came of one of the most noted families in American history.

Compare this environment with that of Dr. Long when four and one-half years before he performed his first operation under ether anesthesia. Performed it in the little village of Jefferson, Ga., twenty miles from a newspaper and more than a hundred miles from a railroad, a hospital, a medical journal, or a surgeon of more than local reputation. Performed it with no professional eye save his own to witness success or failure. Performed it with no professional hand other than his own to aid in case of disaster. Performed this era-making operation when but 26 years of age.

And here permit me to note a most interesting fact, namely, all three of those who in the early forties made strenuous efforts to give the world surgical anesthesia were young men. As we have seen, Long was but 26, when on March 30, 1842, he did his first painless operation under ether; Wells but 29 when on December 12, 1844, he had a diseased tooth painlessly drawn while under the influence of nitrous oxide; and finally Morton was but 27 when on October 16, 1846, he made his historic demonstration in the amphitheater of the Massachusetts General Hospital.

This is in accordance with the old adage which says, "Young men for war and old men for counsel."

In two or three months after Morton's demonstration at the Massachusetts General Hospital, operations under ether were being performed in practically the whole civilized world.

A little while before his historic demonstration, Dr. Morton patented the use of "letheon," which was really sulphuric ether disguised with

aromatics and essential oils; and Dr. Jackson, supposedly an ethical physician, was a silent partner and proposed beneficiary in this transaction.

Dr. Wells, who claimed to be the first to produce surgical anesthesia, protested when Dr. Morton patented his "letheon," not on ethical grounds, but solely because he feared it would advance Morton's interests beyond his own.

It was not long till bad blood developed between all three of the claimants for the honor of the discovery of anesthesia. Dr. Morton's successful demonstration made him by far the most prominent and consequently he and his friends in 1849 petitioned Congress for a substantial money compensation; and as this was contested by the friends of the other claimants, there was precipitated what is known as the "ether controversy."

Into the particulars of this controversy I have neither time nor inclination to enter. Let it suffice to say that it was waged with almost desperation on the part of the contestants and continued for the five years between 1849 and 1854.

In the last named year Dr. Long, yielding to the urgent solicitation of friends, wrote a letter to Senator Dawson of Georgia, showing clearly that he (Dr. Long) had made practical use of surgical anesthesia years before any one of the three New England claimants.

The entrance of a fourth contestant whose claims seemed incontestable was as bright sunshine in dispelling mist and forever ended the famous "ether controversy."

Among them all Dr. Long was the only one who did not desire money compensation, though he very naturally had a laudable ambition that what he had done might receive professional recognition.

The end of the three New England claimants was pathetic. While suffering from what seemed an attack of acute mania, Wells in 1848 ended his own life at the early age of 33. Immediately after reading a scurrilous attack on himself by one of Dr. Jackson's adherents, Dr. Morton was stricken with apoplexy and died in the prime of life in 1868. In 1873 Jackson went hopelessly insane and died seven years later at the age of 76.

In 1877, just forty years ago, I attended a meeting of the American Medical Association, held in Chicago.

There were giants in those days and among some of these in attendance I recall our own noble Dr. N. S. Davis; Dr. S. D. Gross, the prince of American surgeons, and Dr. J. Marion Sims of New York, brainy, brilliant and aggressive. It goes without saying that I, a young physician, had eyes to see all that these and other great leaders did, and ears to hear every word that fell from their lips.

In that period the American Medical Association was not the enormous unwieldly body that it is today, consequently all the business of the meetings, and all the scientific sessions were held in one large hall where everyone could attend.

For one of the afternoon sessions I arrived early and found the hall nearly empty and in practically every seat a copy of the *Virginia Medical Monthly* for free distribution. I picked up a copy and on hastily running through the table of contents, my eye fell on an article from the pen of Dr. Sims and this fact caused me to put the journal in my pocket to be read when I had leisure. The leisure came a few days after I returned to my home; and upon reading Dr. Sims' paper, I found it to be a presentation of the claims of one Dr. Crawford W. Long of Georgia to have been the first to produce surgical anesthesia with sulphuric ether.

I had never before heard of Dr. Long and when I had finished the article I said to myself, "What, one more claimant—one more in addition to Wells, Jackson and Morton!"

The year previous, 1876, was centennial year, and the *American Journal of the Medical Sciences*, the ablest medical periodical ever published in this country and then in the very flower of its long, successful career, printed a series of contributions from leading medical men, giving a concise history of American medicine. Among these was a long article from the pen of Dr. Henry J. Bigelow, already referred to as one of the prominent surgeons of the country and as being present at Dr. Morton's dramatic demonstation at the Massachusetts General Hospital in 1845. After judiciously reviewing all the circumstances connected with the claims of Wells, Jackson and Morton, Dr. Bigelow unhesitatingly awarded the honor of discovery to Morton; and, strange to say, in the whole course of his long review of the claims of the contestants, did not so much as mention the name of Dr. Long.

Forty years ago practically every physician

who aspired to be up-to-date was a subscriber to and a careful reader of the *American Journal of Medical Sciences,* and in most instances its every word was law to those who scanned its pages. What wonder is it, then, that most of us agreed with Dr. Henry J. Bigelow when he awarded the palm to Dr. Morton. What wonder, further, is it that Dr. Sims' article, carrying with it, as it did, the weight of his great name, did not change the attitude of many north of the line of the Ohio River.

As for myself, Dr. Sims' paper, though interesting, made only a passing impression on my mind, and for more than a third of a century hereafter I never for one moment ceased to regard Dr. Morton other than the discoverer of surgical anesthesia.

About four years ago I received a copy of a bulletin issued by the University of Pennsylvania, giving an account of the unveiling of the memorial tablet in the Medical building in honor of Dr. Crawford W. Long, the first to use sulphuric ether for producing surgical anesthesia. After reading this Bulletin came the thought—"If the old, staid, conservative University of Pennsylvania officially recognizes Dr. Long's claim it certainly has some basis of fact."

With this thought in mind as I had leisure I began investigating and in due time reached the conclusion that just as certainly as Harvey discovered the circulation; just as certainly as Jenner discovered vaccination; just as certainly as Lister was the first to make practical use of surgical antisepsis; just that certainly was Dr. Long the first to make practical use of surgical anesthesia.

And now a little about Dr. Long the individual; he was born in Danielsville, Georgia, November 1, 1815. He came of Revolutionary stock, was well bred, received a collegiate education and in 1839, at the age of 24, was graduated in medicine from the University of Pennsylvania. He then went to New York and there spent eighteen months "walking" its hospital wards. Meantime he developed an aptness for survery and in consequence the way opened for him to enter the U. S. Naval service, but finally yielding to the desires of his father he returned to his native State and located in the little village of Jefferson, Georgia.

From the foregoing it will be seen that Dr. Long was much better fitted for the practice of his profession from the educational standpoint, than the average practitioner. Nature had also been kind in giving him excellent judgment, a sympathetic heart, a magnetic presence and a faculty for making and keeping friends. With it all, however, he was modest and retiring almost to timidity, though in professional work he never hesitated nor halted once the way seemed clear.

Certainly the little village of Jefferson was fortunate in securing such professional services as Dr. Long could render. It goes without saying that a physician equipped as was this young Pennsylvania alumnus was not long in making friends and winning clients.

On the social side he mingled with young people, attended ether frolics and from observation and his own experience while under the influence of sulphuric ether came to be impressed with the idea that possibly surgical operations could be painlessly performed on those who had been made insensible with this agent.

This idea, as we have already seen, was successfully tried out on young Venable and at a time when Dr. Long had been in practice but a little more than one year.

He has been criticised because he did not make more effort to bring his fortunate results in the limelight. But as elsewhere noted he was greatly handicapped by his environment, and furthermore opportunities for putting surgical anesthesia to a supreme test were necessarily few and far between in the practice of a young physician in a rural and thinly peopled community.

Such successful demonstrations as he made in addition to being without the aid of newspapers, hospitals and prominent surgeons lacked the sympathetic support of his colleagues; and most of these shrugged their shoulders and in effect, if not in fact, said, "That young dare-devil will kill somebody one of these days if he don't quit fooling with ether."

But when all things are considered these unfavorable criticisms are not to be wondered at. Three hundred years ago when Harvey demonstrated his discovery of the circulation, it is said that no medical man in England who had passed his fortieth year would accept it. Such is human nature. Sometimes over credulous and at others not credulous enough.

But while the work of Dr. Long was well

known and freely discussed in his own locality yet from one cause and another he did not publish an account of it till 1849 when a full report from his pen appeared in the *Southern Medical and Surgical Journal* of Augusta, Georgia.

Dr. Long's best friends can but regret that he so long neglected to publish his experience in surgical anesthesia, but us we have seen there were many obstacles in the way and no one has more aptly referred to these than Dr. I. H. Goss of Athens, Georgia, who said:

> Considered from a present point of view, his delay seems extraordinary. But it must not be forgotten that since that period the world has moved with exceeding rapidity. Seventy-five years ago, for a young practitioner in an obscure village, far from contact with centers of thought, removed from railroads, enjoying but modest postal facilities, with no great hospital organizations to confirm his professional research; for a modest, diffident young physician to claim so startling a discovery as anesthesia has proven to be, without first proving exhaustive truth of its worth, would have brought upon him the adverse criticism of his elders and perhaps the laughter of his colleagues.

In 1851 Dr. Long removed to Athens, Georgia, some twenty miles from Jefferson his first location. At his new place of business he as heretofore and ever after, pursued the even tenor of his way, that of an ethical physician.

When the great crisis of the sixties came, Dr. Long, like his college-mate and life-long friend, Alexander H. Stevens, opposed secession, but when finally Georgia cast her lot with her sister cotton States, he went with his native Commonwealth.

During the Civil War he had charge of a Confederate hospital at Athens, Georgia, and shortly after the struggle ended he entered the U. S. medical service and attended the federal troops stationed at Athens; certainly a mark of confidence on the part of the federal authorities.

At the breaking out of the conflict Dr. Long was in comfortable circumstances but like most southerners sustained great loss. However, when all was over, by the exercise of his usual good judgment he in due time recovered his former prosperity.

As a man and citizen Dr. Long's standing was ever the highest. He was active, alert, always busy and literally died in the harness. The end came June 6, 1878, from a stroke of apoplexy and his last words were framed into an inquiry relative to the condition of the patient at whose bedside he had just been stricken. Thus, if I may be permitted to change the figure of speech—thus in the heat of a professional engagement, the last summons came, and he gave up his life on the firing line.

Notwithstanding the fact that surgical anesthesia is one of the world's greatest contributions to medicine, three quarters of a century's familiarity with its practical use has made it so common that in this world of forgetfulness the tendency is to forget its almost miraculous powers, for in a sense a miracle is wrought every time a patient is anesthetised.

Think of it! The nerves of sensation as dead to impressions as a stone! Consciousness to mental influences as oblivious as the grave. Yet no essential life-function suspended or impaired. The heart throbs. The pulses beat. The chest rises and falls in rhythmical respiration. Every heart stroke almost musical in rhythmical exactness. Each inspiration free, full and in due succession.

Out through the red arteries into the tiniest and remotest capillary, goes the scarlet tinted, oxygen-freighted blood cell on its life-giving mission. Back through the blue veins comes the same cell, now dark hued and purple with its burden of wasted products on its way to destruction in the furnace fires of respiration.

Thus on and on goes the ceaseless round of the life-giving and life-sustaining forces while the surgeon calm and composed goes about his work happy with the consciousness that though his patient has eyes he sees not; that though he has ears he hears not; that though he has mind he heeds not; and that though he has nerves he feels not the agonizing tortures of the knife.

As we have seen this medical marvel was first conceived; this surgical miracle was first wrought; this medical dream was first realized by Dr. Crawford W. Long at Jefferson, Georgia, on March 30, 1842, almost exactly seventy-five years ago.

And now in conclusion permit me to say that living in a world of forgetfulness as we do, let us each resolve to have a care, "Lest we forget" —"Lest we forget."

In the preparation of this paper I acknowledge myself indebted to various authorities and

among these I name Drs. John Collins Warren, Henry J. Bigelow, J. C. Reeve, Dudley W. Buxton, J. Marion Sims, Isham M. Goss, E. M. Magruder, also Joseph Jacobs, Phar. D., Miss Rosa P. Chiles and finally to two devoted daughters of Dr. Crawford W. Long, both of Athens, Georgia, Mrs. Frances Long Taypor and Mrs. Florence L. Bartow.

AN ETIOLOGICAL STUDY OF ACUTE ARTHRITIS.*

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In going over a large series of joint infections, that have been carefully compiled in the record room of a hospital, it is interesting to note the relation that exists between the joint infections and other acute and sub-acute pathological conditions. The most outstanding type is that existing between tonsils and joints. Second, that existing between prostatic, urethral and joint conditions. And third, those joint conditions that are related to a pyorrhea alveolaris, or at any rate where the two conditions exist together.

There are other smaller series that represent the pneumococcus joints, one of the most virulent forms that usually develop in the latter stages of the pneumonias, and directly following a crisis. Again, a much smaller group secondary to typhoid fever, particularly located about the spine. Then a much less frequent type that develops during the progress of the contagious diseases, scarlet fever for example.

There is still another type of a joint that I believe will be found in increasing numbers as the Wassermann test is better understood and more regularly used. There have been several cases come to notice in the out-patient department of Washington University having all the earmarks of an acute arthritis.

One was an ankle case, one, a knee, and the other in the tarso-meta-tarsal joint. The last named case was seen in the clinic within twenty-four hours after the first development of symptoms. He was a negro, a teamster by occupation, and gave no history of injury but the day before had been at his regular employment. The foot began swelling during the course of the night and the following morning he presented himself at our clinic. The foot was swollen, red, and painful, and the temperature of the foot was increased. His temperature by mouth was 100. Ice bags were applied and the foot was put at rest. After a period of four days, the patient returned to the clinic only slightly relieved. A Wassermann test that was taken at his first visit had proved positive and he was accordingly put on a mercurial treatment. The response to this medication was very prompt and gratifying and after a short period of time he was relieved of pain and was able to walk without a limp. The clinic has kept in touch with this man and his condition still remains good, though he still follows his mercurial treatment.

The ankle case was an arthritis with much thickening about the joint. He was a man forty-five years of age, apparently in the best of health, with two healthy sons, no miscarriages in the family, and denying all venereal history. He wrenched his foot while playing tennis, and this was followed by swelling and tenderness which he treated as a sprain. Not getting relief within a reasonable length of time, he applied to the clinic where the joint was found to be still swollen and tender. Strapping was used to mobolize and reduce the swelling, but without results. This was followed by baking and massage, still without relief. A Wassermann test was then made which proved to be positive and the joint condition was greatly improved from the subsequent mercurial treatment.

The knee case before mentioned was one in which the onset was very insidious. The first symptom was a slight pain on walking that produced a limp, and the second, swelling of the joint both by thickening of the joint capsule, and accumulation of fluid within the joint, and later a crepitation and condition resembling a typical villous arthritis. The Wassermann in this case was a four plus positive and the joint has gradually been improving under a mercurial treatment. At the present there is no extra accumulation of joint fluid and he is able to walk on the leg without pain. There is still crepitation present although not so marked as four months ago.

In the foregoing cases of joint syphilis our

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attention is particularly called to the fact that we have a marked resemblance between the symptoms of these cases and the acute arthritides met with following tonsillar infections, traumatic injuries to joints, and the so-called rheumatic joint. I might state at this point that the particular object of this paper, is to bring to your attention the great importance of treating joint cases from the standpoint of their etiology. In carrying out this idea, a routine Wassermann test should be made on all cases of joint infections.

No doubt, some of the early failures in joint operations can be attributed to the fact that the operators were unknowingly dealing with syphilitic joints.

Our list presents a large number of cases of acute infectious arthritis in which the secondary diagnosis is acute or chronic prostatitis, acute or chronic urethritis, or seminal vesiculitis. The distribution of this infection runs much the same as that given in the three hundred and seventy-five cases collected by Finger, and, as he states, about forty per cent. of them are non-articular.

There is one symptom in particular that I have not noted in text books, but it has been called to my attention in taking the clinical history. It is that before the definite localization of the pain, there is aching in several other joints first, and finally, the one to be affected is attracted. This symptom group may not hold true in every case of gonorrheal arthritis but is interesting inasmuch as it has been noted in several cases.

The treatment of the gonorrheal condition has not always been accompanied by brilliant results, and particularly in acute cases improvement in the affected joint is not always noted. In the more chronic types, following the usual massage of the prostate, and the instillation of the posterior urethra, the improvement can be noted daily. The cases in which the improvement has been most marked, are those where a vasotomy has been performed and the vas injected with a twenty to twenty-five per cent. argyrol. There are two cases in particular that come under this grouping. Both of them are knee cases, occuring during the exacerabation of chronic gonorrhea. They both had the usual symptoms, of temperature and swelling about the joint. They were under treatment for several weeks by the usual medical treatments without improvement in either case. Within forty-eight hours following the vasotomy, both cases showed decided betterment, not only in their temperature curve, but also in the joint itself. The inflammation subsided and the pain gradually ceased. Another case occurring in this series, on which a diagnosis of Neisserian arthritis had been made and on which a vastotomy had been performed, and the regular prostatic massage had been carried out, did not recover or show any improvement. A Wassermann was made and a four-plus positive was found to be present. The mercurial treatment was started and the case began to show immediate signs of recovery. Here again, we have proof of the absolute value in a correct etiological diagnosis.

There are a great many cases of osteoarthritis of the spine in which there seem to be an interrelation existing between the painful back and the chronic prostatitis. When these cases are under the care of a genito-urinary specialist, who thoroughly understands prostatic massage, they show improvement, but when they get lax in their treatment, the improvement ceases. This is quite conclusive evidence that the prostate and its related vesicules are the beds of infection for the gonococcus germ.

It now depends upon the skill of our genito-urinary specialist to devise some ways or means to eradicate the germ from this special field. They have already taken a step in the right direction in the drainage of the seminal vesicle and the vasotomy, and it only remains for them to work out further means of sterilizing the genito-urinary tract in order to make their cures more perfect. I believe that we can account for the fact that in the past we have had such a relatively small per cent. of cures in chronic joints in which we knew that the gonococcus is the cause, by the fact that our system of attack has not been far-reaching enough in locating the full extent of the disease.

By far the largest number of cases in which an attempt has been made to work out the diagnosis on an etiologic basis are those in which the infection is in the mouth and throat. Possibly too much stress has been laid on pyorrhea as a cause of joint infection and chronic articular rheumatism, but nevertheless, pyorrhea is found in an aggravated condition in a great many of these cases, and a large number of improvements

and cures have been effected through a thorough cleansing of the teeth. Here, again, we find cases in which the teeth have been pulled, and the gums treated, and still deep foci of infection around the base of the root are located by the x-ray that have never received any treatment at all. We should not be too ready to condemn the supporters of this theory of teeth infections, until we have satisfied ourselves that we have exhausted all means of locating hidden mouth infections.

The nose and nasal sinuses are now coming into vogue as feeders of joint infections. There has not been very much written upon this subject as compared to the tonsillar and alveolar infections, but our nose and throat men are gradually laying more stress on accessory sinus troubles, so why not these as sources of infection to our joints?

The great group of arthritides associated with pathologic tonsils stands out foremost in this classification. Nearly seventy-five per cent. of the cases of acute arthritis are those directly following acute tonsillar infections. Many cases of chronic articular rheumatism show periods of relapse or exacerbation just after attacks of tonsillitis. As the diseased tonsil takes on redness, the joint becomes painful and swollen, almost acting as a barometer to the degree of tonsillar infection and absorption. As to the types of tonsils, most stress has been laid on the large, hypertrophied type, and the flat or buried tonsil has been passed up as a harmless organ. Since a study has been made of these tonsils relative to their bacteria flora, it has been found that the most innocent looking tonsil has harbored the most virulent strains of bacteria. Our work so far in the enucleation of the tonsil has been very elementary. We are just beginning to realize the full value of the complete removal of the tonsil because with an infected crypt, running deep into the base of the tonsil, we still have a focus of infection remaining in the throat. Another advancement along the line of tonsillar infections, relative to joints, is a culture of the enucleated tonsil. To carry on this work, the tonsil should be removed aseptically, and emulsified under sterile precautions. The emulsion is then cultured according to the Rosenau method, and the colonies of bacteria isolated and grown. From these various strains, vaccines should be made and the patient inoculated. The bacteriological examination so far made has shown a preponderance of staphylococcus, pneumococcus, and streptococcus. There have been a few cases of streptococcus viridans, and a few diphtheroid bacilli. It is in a relatively small per cent. that a bacterium is isolated from the joint infected that corresponds with the germ found in the tonsil. Also, there are few positive blood cultures showing the same as in the focus of infection.

Theoretically, there should be found microorganisms within the joint fluid or in the tissues lining the joint cavity. Also, at the time of infection, there should be a strain of the bacteria in the blood. We cannot accept the theory that the joint destruction is due to toxins alone, with the focus of infection at some distant part of the body, but the reasonable assumption is that the bacteria themselves have been able to invade the blood stream and have localized by selection or accident the particular joint involved. Our few positive cultures from about the infected joint, encourage us to persist in attempting to isolate the etiological cause of the disease in the blood stream or about the infected joint. The most gratifying cures have been in cases where we have demonstrated a hidden focus of an infected tonsil, following the removal of the tonsil, and a course of vaccines has rapidly cleared up the case. In our enthusiasm we are liable to give too much credit to the simple removal of the tonsil, and then condemn the procedure when we do not get immediate results. In a great many of these cases if the truth were known, the tonsil never was primarily at fault. The infection may have been located in the middle ear, as was found in one of the cases in our series, in which a knee was involved and in which there was no recovery until after the infection of the ear had been cleared up. It is also possible that there are secondary sources of infection that are being overlooked following the removal of the primary cause, as in our work on the prostate and the seminal vesicles. We originally devoted all of our time to prostatic massage, and intraurethral medication, where now we are attacking the accessory ducts and reservoirs.

There is another possible etiologic cause of which we have very little knowledge. It is that played by the intestinal flora. Since the streptococcus has been isolated in the duodenal ulcer, it has given us a clue that possibly from the

bowel contents there are developed strains of bacteria that permeate the bowel and invade the body structures. There is no one who had laid as great stress on this theory as Sir Arbuthnot Lane of London. He has repeatedly, both in paper and clinic, demonstrated to us the interrelation existing between chronic constipation, and articular rheumatism. He has not only short-circuited the large intestine, but has removed it entirely in order to affect cures for intestinal stasis. It had been known to all of us in our treatment of chronic joint conditions, or rheumatic arthritis, that constipation is always a sign or forewarning of increased joint pains. We have no statistics covering this field, although we have some cases of acute joints following attacks of cholecystitis and acute appendicitis, but for joints involved following intestinal disturbances we know comparatively little or nothing. It is a clinical fact noted that patients who are suffering from chronic multiple arthritis will tell you that they get relief from pain by eating lemons or grape fruit. As to whether this has any bearing on the bacterial activity of the bowel contents is merely a matter of speculation. We know that one-half the success of the various cures for rheumatism about the country is due to their rigid dietetics and the laxatives that are prescribed. It behooves us as physicians to work out a method of studying the bacterial contents of the intestine and attempt to find a cause for a large number of these unfortunate cases in this field.

In conclusion, let me reiterate that the basis of this paper is to point out the great importance of studying the acute and chronic joint cases from a standpoint of their etiology. Let a careful history be written on every case, subject everyone to a Wassermann test; where the joint contains fluid, aspirate and examine by culture, by stain, by differential white count and animal inoculation. Never neglect the culture from the blood, with the complete blood examination. Elicit the careful history of genito-urinary conditions. Send the patient to a competent dentist, and check up on the findings about the nose and throat. With all this information assembled, by a process of elimination, one can find the possible source of infection and take immediate steps for its eradication.

THE DOCTOR AND THE EMERGENCY

Our government is still calling for available men to serve as medical officers of the army. The selective draft has been made and more than a million men have been called. The vast machinery has been set in motion to select a national army of 687,000 men, out of those whose numbers were drawn. For the next few weeks the exemption boards will be kept very busy in making the selections.

To properly equip the armies of the United States will require 20,000 doctors and a call has been made to secure the services of competent medical men. Up to this time the efforts of the government have not met with the expected success and it may become necessary to resort to conscription to secure the required number.

To the credit of our country be it said that our men have responded nobly. About fifty per cent of the available doctors of our country have made application to become members of the Medical Officers Reserve Corps and there are others who intend to submit their applications.

Our duty in the present emergency is plain. We must sustain our President and be obedient to the call of our country. It makes no difference now who started the war. It makes no difference whether we think that our country should have been kept out of the horrible maelstrom. Ever since our President declared that a state of war existed, it has become our duty to drop all of our private views and wishes and join heartily in the defense of our country.

This, of course, will require a great sacrifice. Many a man who has spent weary years in the up-building of his practice and who now has secured a position of financial success, will be very loath to see all this hard work come to naught, his practice scattered with no assurance that it will ever come back. His heart strings will be torn when he thinks of leaving his wife and family, his home, the dearest spot on earth to him. When he realizes that the end of it all may be some unmarked spot, back of the trenches, "somewhere in France," it is enough to make the stoutest heart quail. However, the call of his country has come and has found a responding chord in his own heart. He knows that he is only one of many millions who is called upon for self sacrifice. He realizes that the man on the firing line is his brother and that the mother, who was called upon to give up her only son, is his sister. He knows that he is master of a God-given talent that will save many a precious life and limb and reduce pain and suffering to a minimum.

Thus fortified he will go forth with a stout heart and a firm reliance on the future. He goes at his country's call, answering the cry of humanity, which in the heart of a true physician is always, under any circumstance, greater than every other consideration. —*From The Madison County Doctor.*

Civilian health is the rock upon which military efficiency rests.

Swimming is a healthful exercise.

ILLINOIS MEDICAL JOURNAL

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State society will pay no bills for legal services except those contracted by the committee. Notify the Chairman at once. Don't employ attorneys.

AUGUST, 1917

Editorials

THE ALIEN AND THE DRAFT.

In many districts in the large cities with a large alien population the exemption boards predict that there will be difficulty in securing the required quota, or if secured it will take practically all the citizens and leave the aliens to secure the business of the patriots while the latter are serving at the front. Prompt passage of the bills now before the congress to correct this condition may equalize the burden in subsequent calls, but it cannot cure the present injustice.

Under the present law it seems that the quota required was based on the Census estimate of population which did not exclude the aliens. After the registration, which indicated that the former Census estimates were far from correct, the Bureau of the Census issued "revised" estimates of population apparently based on the registration itself. Thus in Chicago the former estimate of the men between twenty-one and thirty-one years of age was 300,800. The actual registration was 314,116, an increase of 4.4 per cent. But the official census estimate of Chicago's midyear population was 2,547,201, which for the purpose of the draft was raised to 3,639,957, an increase of 42.9 per cent. Just why there should be such a discrepancy no one seems to know.

BEG YOUR PARDON!

In the article on "Military Exemption Board" in the July JOURNAL we failed to mention the name of Dr. P. M, Burke as a member of the LaSalle County, No. 2 Board. This was an oversight. This board is the only one in the State, as far as we are informed that had two physician members.

CENSUS BUREAU WANTS ACCURATE STATEMENTS

More accurate and definite statements of the occupations of decedents should be written upon death certificates. Until this is done mortality statistics by occupations will continue to be unsatisfactory.

The Bureau of the Census is planning for the near future a monograph on tuberculosis. How much more valuable this monograph will be if it is possible to show accurately the occupations of decedents.

As a physician you appreciate the importance of such statistics. As a physician you are by education better qualified than the ordinary informant to understand a proper statement of occupation.

Will you not, therefore, take pains to see that the occupation items upon each one of your death certificates are properly supplied?

TRI-STATE DISTRICT MEDICAL SOCIETY

The Tri-State District Medical Society extends a hearty invitation to the doctors of Illinois to be present at its annual scientific and clinical meeting to be held at Dubuque, Iowa, September 4, 5, 6. The doctor's wives and ladies are also cordially invited to be present.

Dubuque is providing a live ladies' entertainment committee, as we feel that this meeting will not be a success without the presence of the ladies. Bring them with you, Doctor, and come prepared to stay the whole session, and particularly to attend the banquet at its close (this includes the ladies).

Dubuque is prepared to welcome us with all her well-known hospitality, and the program of the

meeting which follows is so solid and attractive that it may reasonably claim the attention of every medical man in this and surrounding territory. It is not often permitted us to hear and meet personally such a galaxy of stars of the first magnitude as appear among the names on the program. You simply can't afford to miss such a magnificent treat. "A word to the wise is sufficient."

As has been well said, "Not only for scientific inquiry and discussion, but also to promote good-fellowship and a true fraternal and professional spirit, let us come together for a good time."

PROGRAM OF TRI-STATE DISTRICT MEDICAL SOCIETY.

First Day—September 4th—Morning Session.

7:00—Clinics at Finley and St. Joseph's Mercy Hospitals.

9:30—Address of Welcome—James Saul, Jr., Mayor of Dubuque.
Response to Address of Welcome—Emil Windmueller, M. D., Councilor of Illinois State Medical Society, Woodstock, Illinois.

10:00—The Child's and Adolescent's Heart; Pathological Sequelæ—Daniel Lichty, M. D., Rockford, Illinois.
Discussion—Dr. Paul E. Gardner, New Hampton, Iowa.

10:25—Symptoms and Diagnosis of Gall Bladder and Duct Disease—H. A. Sword, M. D., Milledgeville, Illinois.
Discussion—Dr. I. N. Grow, Marengo, Iowa.

10:50—Indications for and the Technic of the Administration of Blood—E. S. Murphy, M. D., Dixon, Illinois.
Discussion—Open.

11:15—Parental Alcoholism—L. R. Head, M. D., Madison, Wisconsin.
Discussion—Dr. D. N. Loose, Maquoketa, Iowa.

Afternoon Session.

1:30—Prostatectomy Simplex. Another Plea for Conservation—J. T. White, M. D., Freeport, Illinois.
Discussion—Dr. J. E. O'Keefe, Waterloo, Iowa.

1:55—Practical Consideration of Accessory Sinus Disease with Special Reference to Non-Operative Treatment—Henry G. Langworthy, M. D., Dubuque, Iowa.
Discussion—Dr. A. E. Sherman, Aurora, Illinois.

2:30—Fracture of the Spine—T. W. Nuzum, M. D., Janesville, Wisconsin.
Discussion—Dr. C. L. Best, Freeport, Illinois.

2:55—Newer Studies in the Prevention of Diphtheria with Special Reference to the Schick Test and Toxin-Antitoxin Immunization—Henry Albert, M. D., Prof. of Path. and Bact., Iowa City, Iowa.
Discussion—Dr. W. D. Stovall, Madison, Wisconsin; Dr. Guthrie McConnell, Waterloo, Iowa.

3:30—Before the Operation and After—L. W. Littig, M. D., Davenport, Iowa.
Discussion—Dr. J. Forest Bell, Elgin, Illinois.

3:55—Address in Surgery—Dr. A. J. Ochsner, Prof. of Surgery, University of Illinois, College of Medicine, Chicago, Illinois. Subject—Practical Hints Concerning Surgical After Treatment.

Evening Session

7:15—Address in Medicine—Dr. Victor C. Vaughan, Prof. of Hygiene and Physiological Chemistry, Ann Arbor, Michigan. Subject—Protein Poisons and Their Relation to Disease.

9:00—Charge of Entertainment Committee. Address—Dr. C. W. Hopkins, Chief Surgeon, C. & N. W. Ry., Chicago.

Separate evening entertainment is being arranged for the ladies by the Dubuque Ladies' Committee.

Second Day—September 5th—Morning Session.

7:00—Clinics at Finley and St. Joseph's Mercy Hispitals.

9:30—Repair of Fractures (illustrated)—A. Alguire, M. D., Belvidere, Illinois.
Discussion—Dr. W. A. Munn, Janesville, Wisconsin.

9:55—Medical Treatment of Affections of the Nose and Throat—Grant W. Hatch, M. D., Rockford, Illinois.
Discussion—Dr. W. B. Small, Waterloo, Iowa.

10:20—A Simple Drainage Apparatus for the Continuous Vacuum Treatment of Empyema of the Pleural Cavity—J. J. Grant, M. D., Freeport, Illinois.
Discussion—Dr. Robt. White, Prairie du Chien, Wisconsin.

10:45—Address in Surgery—Dr. Edward Ochsner, Chicago, Illinois. Subject—A Specific for Every Pathological Micro-organism, the Ultimate Goal of Surgery.

Afternoon Session

1:30—Present Status of Blood Pressure—G. E. Crawford, M. D., Cedar Rapids, Iowa.
Discussion—Dr. Wm. T. Lindsay, Madison, Wisconsin.

2:00—Address in Medicine—Dr. Wm. A. Pusey, Prof. of Dermatology, University of Illinois College of Medicine, Chicago, Illinois. Subject—A Critical Consideration of Some of the Present Problems in Syphilis.

3:30—Address in Surgery—Dr. Fred H. Albee, Prof. of Orthopedic Surgery, New York Post-Graduate Medical School, New York, N. Y. Subject—Plastic Bone Surgery, with Special Application to War Surgery. (Illustrated by motion pictures.)

5:00—Post Operative Oil Embolism; Its Symptoms, Etiology and Prevention (illustrated by Vitagraph)—Karl F. Snyder, M. D., Freeport, Illinois.

Evening Session.

6:00—Luncheon for the doctors and their ladies, followed by entertainment—probably boat ride on the Mississippi. In charge of the Dubuque Entertainment Committee.

Third Day—September 6th—Morning Session

7:00—Clinics at Finley and St. Joseph's Mercy Hospitals.

9:30—Direct Laryngoscopy—F. W. Broderick, M. D., Sterling, Illinois.
Discussion—Dr. L. Ostrum, Rock Island, Illinois.

9:55—Fracture of the Spine with Presentation of Case—W. P. Slattery, M. D., Dubuque, Iowa.
Discussion—Dr. Geo. P. Gill, Rockford, Illinois.

10:20—Address in Surgery—John B. Deaver, Prof. of Surgery, Medical Department, University of Pennsylvania. Subject—(To be announced later.)

Afternoon Session.

1:00—Some Difficult Diagnostic Surgical Problems (Illustrated by Cases)—D. R. Connell, M. D., Beloit, Wisconsin.
Discussion—Dr. B. A. Michel, Dubuque, Iowa.

1:25—Gastrotopsis—J. W. MacDonald, M. D., Aurora, Illinois.
Discussion—Dr. P. A. Bendixen, Davenport, Ia.

1:50—The Use of Sodium Cyanide as a Respiratory Stimulant—A. S. Loevenhart, M. D., Madison, Wisconsin.
Discussion—Open.

2:15—A Defense of the Obstetrical Forceps—Wm. L. Allen, M. D., Davenport, Iowa.
Discussion—Dr. H. A. Brennecke, Aurora, Ill.

2:40—Diagnosis and Treatment of Pyloric Stenosis—H. M. Orr, M. D., La Salle, Illinois.
Discussion—Dr. C. A. Waterbury, Waterloo, Ia.

3:10—Address in Surgery—Dr. Charles H. Mayo, President A. M. A., Rochester, Minnesota.

Evening Session

6:30—Banquet for doctors and their ladies, Hotel Julian.

Toastmaster—Dr. Arthur Dean Bevan, Prof. of Surgery, Rush Medical College, Chicago, and President-elect of the American Medical Association.

Addresses and Toasts—
Dr. Arthur Dean Bevan.
Hon. William L. Harding, Governor of Iowa.
Hon. Emanuel L. Philipp, Governor of Wisconsin.
Hon. Frank O. Lowden, Governor of Illinois.
Dr. Charles H. Mayo, President of the A. M. A.
Dr. H. E. Dearholt, President, Wisconsin State Medical Society.
Dr. J. N. Warren, President, Iowa State Medical Society.
Dr. E. B. Coolley, President, Illinois State Medical Society.
Dr. John B. Deaver, Professor of Surgery, University of Pennsylvania.

Leaders of Special Dicussions During Session—
Iowa—
Dr. T. B. Throckmorton, Secretary, Iowa State Medical Society, Des Moines.
Dr. James R. Guthrie, Dubuque.
Dr. David S. Fairchild, Jr., Clinton.
Wisconsin—
Dr. Rock Sleyster, Secretary Wisconsin State Medical Society, Waupun.
Dr. C. R. Bardeen, Dean of Medical College, University of Wisconsin, Madison.
Dr. John F. Pember, Janesville.
Illinois—
Dr. E. W. Fiegenbaum, President-elect, Illinois State Medical Society, Edwardsville.
Dr. Jeremiah H. Stealy, Freeport.
Dr. August H. Arp, Councilor, Illinois State Medical Society, Moline.

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Dr. Emil Windmueller, Dr. Edwin S. Gillespie, Dr. August H. Arp—Councilors of Illinois State Medical Society.

Dr. M. R. Wilkinson, Dr. Wilson Cunningham, Dr. F. T. Nye, Dr. G. Windesheim—Councilors of Wisconsin State Medical Society.

Signed,
W. B. PECK, President.
W. C. PHILLIP, Secretary.

PROGRAM COMMITTEE.

Dr. Lawrence H. Prince, Madison, Wis.
Dr. Wm. H. Perry, Sterling Ill.
Dr. C. A. McGuire, Dubuque, Iowa.

THE MEDICAL PRACTICE ACT

Illinois physicians are well pleased over the passage of the Medical Practice Act at the last session of the legislature. Much credit is due especially to Representatives Church, De Young, Dieterick, Guernsey, McDavid, Odum, Shurtleff and Snell, Senator Barr and Doctors Drake, Noble, Cooley, Bevan, Deal and Snell. We of Montgomery County are proud of the part some of our men took in this legislation. Dr. Bullington saw to it that his brother, Representative Bullington, who was on the House Judiciary Committee, was acquainted with all the facts of the case. Dr. Canaday had a heart-to-heart talk with his brother, Sentor Canaday, who always has good following in the Senate. Dr. Snell, brother of Representative Snell of Macoupin, was one of the physicians who was honored by the opportunity to talk on this bill before the House Judiciary Committee. And we venture the opinion that before Dr. Snell had finished his talk the members of the committee were wishing, as we of Montgomery County have often wished, that Dr. Snell was a member of the legislature. There is a movement on foot in this country, and in our State in fact, to elect doctors to the legislature. There is never a session of that body that we do not need men there to explain and uphold the interests of pub-

lic health. We hope the time is not far distant when there will be more physicians in our legislature and that these men will be no less physicians than law makers.—*Bulletin of the Montgomery County Medical Society.*

NEW SUPERINTENDENTS

The new created Department of Public Welfare, of which Charles Thorne, of Winnetka, was appointed Director, has recently made numerous changes in the State Hospital service, of which we note the following which may be of some interest to our readers:

Dr. Eugene Cohn, who began his medical career in St. Jacob in our county, is named head of the Kankakee State hospital, the largest in the state. Dr. Cohn at present is assistant superintendent of the Chicago State hospital at Dunning. He has been in the service twelve years, having risen by promotional examination from the ranks. He has served as assistant superintendent at Anna, Peoria, Kankakee and Chicago State hospitals. He has an enviable reputation as a surgeon. His work in surgery among the insane has attracted national attention.

Dr. C. H. Anderson, of McLeansboro, is the new superintendent of the Anna State hospital, vice, Dr. J. A. Campbell, resigned. Dr. Anderson for a number of years was superintendent of the Chester State hospital for criminal insane.

Dr. H. C. Carriel, of Jacksonville is named superintendent of the Dixon state school and colony at Dixon. This institution was created four years ago for the care and treatment of epileptics. It has been in process of construction and has not had a medical superintendent. The school has 1,000 acres and soon will be able to accommodate 500 patients. Dr. Carriel was for twelve years superintendent of the Jacksonville state hospital of which his father before him was superintendent for twenty-five years. It will be his duty at Dixon to open the buildings now finished and to develop the colony to its capacity which will be from 1,500 to 2,000.

Dr. George A. Zeller, of Peoria, is chosen superintendent of the Alton state hospital. Dr. Zeller was superintendent of the Peoria state hospital for ten years; he served four years as state alienist and has achieved a noteworthy and wide reputation as an administrator of state hospitals and as a friend of the insane.—*The Madison County Doctor.*

The department of public welfare announced the following appointments and transfers August 1:

Dr. Ralph T. Hinton, superintendent of the Peoria State Hospital, transferred to Elgin State Hospital, vice Dr. H. J. Gahagen, resigned. Dr. Hinton was superintendent at Elgin before going to Peoria, three years ago.

Dr. Charles E. Read, superintendent of the Watertown hospital, is transferred to the Chicago State Hosoital at Dunning, vice Dr. George Leininger.

Members of the board of commissioners of public welfare were announced as follows:

Dr. E. C. Dudley of Chicago, chairman; Dr. Emil G. Hirsch of Chicago; Dr. F. P. Norbury of Springfield; Judge B. R. Burroughs of Edwardsville, and Dr. Edwin C. Hayes, sociology professor of the University of Illinois.

Correspondence

UNIVERSITY OF ILLINOIS

COLLEGE OF MEDICINE,

CHICAGO, ILLINOIS.

July 9, 1917.

To the Editor: After thirty-five years continuous service in an official capacity in the College of Physicians and Surgeons of Chicago, now the College of Medicine of the University of Illinois, I tendered my resignation on July 1st, as Senior Dean and Professor of Surgery and Clinical Surgery and head of the department to President James of the University, and it has been accepted as you will see by the enclosed copy of letter.

My best wishes and influence shall always remain with the College and University during the remaining years of my activity; while my immediate personal services will be given to the Government in its present emergency.

Yours very truly,

Dr. A. K. STEELE.

UNIVERSITY OF ILLINOIS

PRESIDENT'S OFFICE.

URBANA-CHAMPAIGN, ILLINOIS.

July 9, 1917.

To the Members of the Faculty College of Medicine, University of Illinois:

My Dear Sir: I have accepted, subject to the approval of the Board of Trustees of the University of Illinois, the resignation of Dr. D. A. K. Steele as dean of the Senior College of the University of Illinois College of Medicine.

Dr. Steele has performed a long and brilliant service to medical education in the city of Chicago. Under great difficulties he has labored in season and out of season to raise the level of medical training and medical research. Without financial means, in the midst of opposition, he has succeeded in building up a college which will find its final fruition in one of the well-equipped and well-organized departments of a great state university. The thanks of the Board of Trustees

and the appreciation and esteem of his colleagues and the students and alumni of the University follow him in his future career and their very best wishes attend him, especially in his extraordinarily active interests in the organization and development of the health service of our national defense.

Dr. A. C. Eycleshymer, professor of anatomy in the College, has been appointed dean of the College until further notice.

Faithfully yours,

EDMUND J. JAMES.

THE MEDICAL SITUATION.

Chicago, Aug. 3, 1917.

To the Editor: The war has come upon us at a most critical time in medical affairs. As a result of the myopic influence of self-appointed directors of medical education, liberally supported in their pernicious activities by limitless endowments of one sort or another, the number of medical students in reputable medical schools has been falling off at the rate of about 1,500 a year. There has grown up at the same time an army of chiropractics and other cults of would-be medical practitioners from "schools" with hordes of deluded students.

As the legitimate increment of medical men and curing doctors has been cut off by forces acting upon medical faculties, by forces acting on legal authority, and by the discouragements inevitable to a long, tedious and uninspiring tutelage, the irregular practitioners, the osteopaths and other manipulators, have come into their own because the sick folks want attention and comfort and are willing to pay for it. They don't know that they need science, and such dehumanized science as is offered them by the product of our pedantic medical schools they are unable to stomach.

Thus in the United States, with a total population of 100,000,000, and 130,000 practicing physicians and an annual increment of less than 4,000 new licentiates, we are called upon by the draft to give up all of our medical students, to the number of 15,000, and at the same time to lose all of the fit young men between twenty-one and thirty-one from whom new students could be recruited.

It is possible that some of the losses in our medical students and the young medical men who are going across seas can be made up from those rejected as lame, halt or blind, or as alien enemies, if our schools admit on academic qualifications only. But we believe that it would be a serious handicap to the medical profession of the future if the sources of its recruits were limited to those unfit for military service.

There ought to be 50,000 physicians and surgeons for each 1,000,000 soldiers sent to France. These men ought to be physically fit and thoroughly equipped by proper hospital and clinical experience. They need not all be young and capable of going into the ranks; indeed, a considerable portion of them ought to be men over fifty, who have had experience in administrative affairs of a broad and extensive sort. It is obviously as unwise to limit medical military service to a birthday age below fifty-five as it is to require every youth of a birthday age of twenty-one to thirty-one to go into the trenches.

If the war lasts six years, and there is no reason to think that it will terminate sooner, the scarcity of medical attendants in the United States, regular or irregular, will be very great. With less than 100,000 physicians of suitable age and reasonably fit physicial condition to draw from, the first two drafts of 1,000,000 men each will leave the medical affairs of the United States in the hands of the decrepit, the infirm, and the alien enemies. If we learn from the experience of England, we will see to it that such a condition does not arise.

There seem to be certain things which we as a profession ought to do at once. First of all, we ought to see to it that the draft does not disturb any legitimate pursuit of medicine by any student, fit or unfit for military service, now matriculated or preparing for the study of medicine in college or scientific school. It is inevitable that a large number of theoretically prospective medical students will be diverted to the more inspiring fields of aviation, engineering, and other activities of war. The enrollment of medical schools is likely to fall off, or be recruited from the unfit, from alien enemies, and possibly from "slackers" (if medical students become exempt).

We ought to cut off, in the second place, all the red tape, all the academic fol-de-rol and the titled and hooded frumpery which have fastened themselves on our medical faculties and our state examining bodies. Medical students should be accepted before their intellectual and normal en-

thusiasm has been fagged out by agnostic collegiate disciplinarianism. Until the end of the war, a high school education, with the urge that goes with it to do, is better equipment for a medical student than the bachelor's or doctor's degree, with the intellectual fag with which it is ordinarily sealed.

It is our duty as a profession to fill the medical school with young students and to there foster and teach methods of cure, and not the tricks of passing examinations. The school itself should be imbued with the necessity of curing the sick and not of presenting therapeutic nihilism and scientific pessimism, to the confusion of the student and dwarfing of the spirit to serve and care for the sick.

It is necessary to combine, co-ordinate, concentrate and intensify the medical curriculum. Make clinical service by the student his first and every-day lesson from the moment of matriculation to the end of his medical tutelage. Our present day medical graduates are not conspicuous for professional enthusiasm, for diagnostic judgment, for therapeutic resourcefulness, or for humanitarian and social inspiration. Our present day medical disciplinarians do not promote a love for science in the service of man.

With the reorganization of the medical school should come a reorganization of our medical societies. They should be made democratic and socially helpful. Every other class of service has taken on a "class conscience" since the beginning of this war and it is time that the medical societies should lay aside their oligarchic form and become democratic. They should abolish their constitutions and houses of delegates, and be ruled by temporary and local conditions and serve at once the community, the patients and the families of those who are called to war. This and these things are patriotic duties, necessary, reasonable and opportune.

BAYARD HOLMES.

MEDICOLEGAL

"OPHTHALMOLOGIST" AND OPTOMETRY

(McNaughton vs. Johnson (U. S.), 37 Sup. Ct. R. 178)

The Supreme Court of the United States affirms an order denying the complainant an injunction to restrain the enforcement of the California statute regulating the practice of optometry, but which provides that it shall not be construed to prevent duly licensed physicians and surgeons from treating the human eye. The court says that the complainant claimed to be a regularly graduated ophthalmologist, which is a school of scientific learning and practice confined to the treatment of the inflammation of the eye and its membranes and in fitting glasses to the human eye; that she did not employ either medicine, drugs or surgery, nor was there anything in her practice hurtful to the individual or dangerous to society, and that there was no law in the state of California prescribing an examination for and regulating the practice of ophthalmology. She charged that the act regulating the practice of optometry offended the Fourteenth Amendment of the Constitution of the United States in that it deprived her of her property without due process of law and denied her the equal protection of the laws; and as specifications of the last she instanced the exemption from the provisions of the act of licensed physicians and surgeons; the appropriation to the sole use of registered optometrists of the right to employ any means other than the use of drugs in the measurement of the powers or range of vision; the denial to all other schools of scientific learning and practice the right to measure the range of human vision other than by the use of drugs on equal terms with the physician and surgeon; and contended generally that her occupation being a lawful one, not hurtful to the individual or dangerous to the community, the state had no power to impose discriminatory regulations on it. It is established that a state may regulate the practice of medicine, using this word in its most general sense. The complainant tried to escape from the rulings of those cases by which that is established by asserting a discrimination against her. She was an ophthalmologist, she averred, as above stated. She attacked the statute because, to use the language of her counsel, it "arbitrarily discriminates against every other school of scientific knowledge and practice in favor of the school employing drugs in determining the accommodative and refractive states of the human eye." It undoubtedly does, but gives the name of the school that of "optometry" and its practitioners "optometrists." This court cannot suppose that any injury was done her by the difference in names, and yet she gave no other tangible ground of complaint. Whether they are different, and whether the difference is of substantial or unsubstantial degree, she did not inform the court. She practiced one of them in preference to the other, and for the practice of that one the state has declared that its certificate of competency is necessary. The state has such power.—*Journal A. M. A.*

Public Health

DOCTORS RESPOND TO WAR'S FIRST DEMANDS

Medical Profession Stands First In Patriotic Sacrifice

Aside from the scores of Illinois physicians who have volunteered for service in the Medical Reserve Corps of the United States Army and Navy and aside from those who have become connected with the various hospital units now in the fields or subject to call, almost 1,200 are giving their time without compensation to the duties connected with exemption boards and the examination of the recruits for the newly conscripted national army. For the latter service alone more than 12 per cent of the total number of physicians in the State are giving their service to the nation.

There are 227 exemption boards in Illinois, on each of which there is one regular medical member and on 56 of these boards more than one physician is serving, making a total of 283 physicians as members of these boards. Of these 227 districts 86 are located in Chicago and 9 in Cook County outside of the city, making a total of 95 for Cook County. There are 132 boards in the State outside of Cook County, 118 being county boards and 14 located in the down state cities.

In addition to the medical service on the exemption boards proper, there will be required 914 physicians to serve as re-examiners and assistant examiners of conscripts, 351 of whom will serve in Chicago, 500 in the down state counties and 63 in the down state cities.

No other profession is contributing so much in this time of the nation's peril as the medical profession, and yet there is a belief among those who are supposed to know that the demands upon the profession for wartime service have but begun.

SANITARY SERVICE ABOUT THE ROCKFORD CANTONMENT

For the purpose of rendering efficient sanitary service in the zone about Camp Grant, the United States Government Cantonment at Rockford, the State Department of Public Health, the United States Public Health Service, the American Red Cross and the local health authorities are co-operating on a constructive plan.

The sanitary supervision of this zone will be under the direction of a sanitary engineer designated by the State Department of Public Health, and the Corps engaged in carrying out the program will be developed from the several co-operating agencies to such an extent as needs may indicate.

The State Department of Public Health is now engaged in the preparation of Rules and Regulations for the Control of Venereal Disease which will be in force in the Rockford zone as well as in the zones which will be established about the other mobilization camps in Illinois under the provisions of a law enacted by the past General Assembly. This law gives to the State Department of Public Health very broad powers in the abatement of nuisances and also conditions prejudicial to the public health or prejudicial to the health of the soldiers in military camps, and these powers may be exercised throughout the zone extending one-half mile beyond the limits of any military camp in the State.

TYPHOID IN DECATUR

A serious outbreak of typhoid fever explosive in character developed at Decatur during the middle and latter part of July. Twenty-one cases were reported up to the 28th and all of them were confined to the same general neighborhood.

Five cases were reported as having developed about July 15th and five on July 17th. It was found that all persons reported, with one exception, had used milk from the same dairy.

The premises at this dairy were found to be extremely insanitary and a sample of milk taken by a representative of the State Department of Public Health showed four million bacteria to the cubic centimeter.

No typhoid carriers were found to be connected with the milk distribution of this dairy, but the cows have constant access to a creek which receives the sewage from several institutions in the City of Decatur and which is used for bathing and whose banks are a favorite resort for picnics and outings. Some places along the shores of this creek were found to be foul from human waste.

The State Department of Public Health is actively co-operating with the health authorities of Decatur and it is hoped that secondary infections from the original foci will be prevented.

SANITARY SURVEY AT FREEPORT

The first complete Health and Sanitary Survey to be carried out by the State Department of Public Health through its newly created division of Surveys and Rural Hygiene, is being rounded out in the City of Freeport and the field work is practically done.

This survey includes the study of the water supply, sewerage system, garbage collection and disposal, street cleaning, school sanitation, medical supervision of school children, houses, communicable diseases including tuberculosis, and public health administration. A critical study was made of the vital statistics of the city with comparison of the figures of the statistics of other communities of like size and similarly situated.

During the course of the survey, which covered a period of five weeks, every home in the city was visited for the purpose of ascertaining the sanitary conditions and for the collection of other important data.

While the work was done by the State Department of Public Health and under the direct supervision of Paul L. Skoog, representing the department, it was essentially a community undertaking in which cordial co-operation was given by the city authorities, the Chamber of Commerce, the Stephenson County Medical Society, the Freeport Woman's Club and many individual citizens.

The survey findings are now being compiled in the offices of the State Department of Public Health and will be published in the near future in more or less permanent form.

PREVALENCE OF INFANTILE PARALYSIS

The exact interpretation to be given to statistical data in regard to the prevalence of acute anterior poliomyelitis in Illinois at this time is a matter of question. Accepting the figures exactly as they appear, one is impressed that the number of cases for the first half of 1917 is largely in excess of the cases for the same period in 1916 and that the disease is distributed over a much wider geographical area. During the first six months of 1916 poliomyelitis appeared in 18 counties, while during the first six months of the present year the dieases was reported from 33 counties. Up to July 1, 1916, the total number of cases reported in Illinois was 51, while so far this year 72 cases have been reported.

Without careful analysis the mortality from the disease seems striking. During the first half of 1916 there were but 3 deaths from infantile paralysis reported to the division of vital statistics of the State Department of Public Health, while so far this year there have been 13 deaths, making the death rate for 1917 nineteen per cent of reported cases, as compared with the 1916 death rate of six per cent.

The conclusions drawn by the hasty reader are that poliomyelitis is more widespread and more threatening at the present time than it was a year ago and that it is appearing in a more malignant and more fatal form. As a matter of fact it is very doubtful if there have been as many cases during 1917 as during the same period in 1916. The concern about the disease when it appeared in epidemic form on the Atlantic seaboard last year and when the disease developed to the extent of 1,000 cases in Illinois, caused a very general discussion and a new interest in its diagnosis on the part of the medical profession, with a result that diagnoses are being made more promptly and accurately with reports of cases of questionable character which were not reported last year.

It has also been ascertained by representatives of the State Department of Public Health, who have traveled throughout the State engaged in poliomyelitis work, that a considerable number of children who died early in 1916 and whose deaths were ascribed to other causes are now believed by their attending physicians to have died of infantile paralysis. These unrecognized fatal cases give an apparent low mortality and doubtless account to a considerable extent for the apparent high mortality noted during the present year.

Despite the available figures, Dr. C. St. Clair Drake, Director of the State Department of Public Health, feels that the general situation is more satisfactory than a year ago, and that while there is occasion for care and watching there is no reason for grave apprehension.

RESULTS OF THE PHYSICIANS' EXAMINATION HELD BY THE ILLINOIS STATE BOARD OF HEALTH IN CHICAGO

January 24-25-26, 1917

Present	72
Passed	48
Failed	23
Incomplete	1

Per cent failed, 32.4.

PASSED

College—	Year Grad.	Total No. Passed
Chicago College of Med. & Surg.	1915 (1), 1916 (8), 1917 (4)	13
Chicago Hospital College of Medicine	1916	1
Hahnemann Medicine College	1915	1
Harvard Medical School	1916	1
Jenner Medical College	1915 (1), 1916 (1)	2
Johns Hopkins	1916	1
Keokuk Medical College	1896 (1), 1905 (1)	2
Loyola University (Bennett)	1916 (9), 1917 (1)	10
Meharry Medical College	1915	1
Rush Medical College	1915 (1), 1916 (6)	7
St. Louis University	1915 (1), 1916 (1)	2
University of Greece	1900	1
University of Illinois	1916	1
University of Iowa	1916	1
University of Louisville	1910	1
University of Maryland	1916	1
University of Minnesota	1908	1
Vanderbilt University	1910	1
		48

FAILED

College—	Year Grad.	Total No. Failed
Chicago College of Med. & Surg.	1916	5
Chicago Hospital College of Medicine	1915	2
Hahnemann Medical College	1915	1
Hospital College of Louisville	1904	1
Imperial University Moscow	1895	1
Loyola University (Bennett)	1916	4
Meharry Med. Coll.	1912 (1), 1913 (1), 1915 (1), 1916 (2)	5
National University, Chicago	1903	1
Reliance Medical College	1911	1
Royal College of Scotland	1909	1
Rush Medical College	1896	1
		23

RESULTS OF THE PHYSICIANS' EXAMINATION HELD BY THE ILLINOIS STATE BOARD OF HEALTH IN CHICAGO

February 21-22-23, 1917

Present	29
Passed	11
Failed	18

Per cent failed, 62.1.

PASSED

College—	Year Grad.	Total No. Passed
Chicago College of Medicine & Surg.	1916	3
Jenner Medical College	1916	1

Loyola University (Bennett)	1916 4
Rush Medical College	1914-1916 2
University of Colorado	1916 1
	11

FAILED		Total No.
College—	Year Grad.	Failed
Bennett Medical College	1910 (1), 1915 (1)	2
Chicago College of Med. & Surgery	1916	3
Chicago Hospital College	1915 (2), 1916 (1)	3
College of Medicine & Surgery (Chgo.)	1910	1
Hospital College of Louisville	1904	1
Jenner Medical College	1910	1
Karolinska Med. Coll. Stockholm	1899	1
Loyola University (Bennett)	1910 (1), 1916 (1)	2
National Univ. of Greece	1905	1
National Univ. of Arts & Science	1916	1
University of Louisville	1908 (1), 1911 (1)	2
		16

RESULTS OF THE PHYSICIANS' EXAMINATION HELD BY THE ILLINOIS STATE BOARD OF HEALTH IN CHICAGO

May 3-4-5, 1917

Present	143
Passed	113
Failed	27
Incomplete	3

Per cent failed, 19.3

PASSED		Total No.
College—	Year Grad.	Passed
Bennett Medical College	1910 (1), 1915 (1)	2
Chicago Hospital College of Medicine	1915 (1), 1916 (2)	3
Chicago College of Medicine & Surgery	1916 (2), 1917 (37)	39
Columbia University	1901	1
Hahnemann Medical College	1917	7
Loyola University (Bennett)	1916 (5), 1917 (9)	14
Medico-Chirurgical Pennsylvania	1916	1
Northwestern University	1917	10
Rush Medical College	1916 (1), 1917 (23)	24
University of Illinois	1917	11
University of Southern California	1916	1
		113

FAILED		Total No.
College—	Year Grad.	Failed
Bennett Medical College	1914	1
Chicago College of Med. & Surg.	1916 (6), 1917 (4)	10
College of Medicine and Surgery	1910	1
Hahnemann Medical College, Chicago	1915 (1), 1917 (1)	2
Jenner Medical College	1915 (1), 1916 (1)	2
Loyola University (Bennett)	1916	2
Meharry Medical College	1913 (1), 1916 (2)	3
Northwestern University	1917	1
Reliance Medical College	1911	1
Royal University of Naples	1914	1
University of Louisville	1911	1
University of Moscow	1895	1
Female Institute Charcow	1914	1
		27

RESULTS OF THE PHYSICIANS' EXAMINATION HELD BY THE ILLINOIS STATE BOARD OF HEALTH IN CHICAGO

June 14-15-16, 1917

Present	214
Passed	189
Failed	24

FAILED	Total No.
Withdrew	1

Per cent failed, 11.3.

PASSED		Total No.
College—	Year Grad.	Passed
Chicago College of Med. & Surg.	1916 (8), 1917 (44)	52
Chicago Hospital College of Medicine	1917	7
College of Medicine & Surgery, Chicago	1910	1
Eclectic, Cincinnati	1917	1
Hahnemann Medical College, Chicago	1917	14
Harvard Medical School	1915	1
Hospital College, Louisville	1904	1
Jefferson Medical College	1917	1
Jenner Medical College	1916 (1), 1917 (7)	8
Loyola University (Bennett Medical)	1916 (3), 1917 (11)	14
Meharry Medical College	1916	1
National University of Greece	1905	1
Northwestern University	1917	15
Rush Medical College	1916 (2), 1917 (43)	45
St. Louis University	1915	1
University of Illinois	1917	29
University of Louisville	1908	1
University of Pennsylvania	1917	1
Vanderbilt University	1917	1
Washington University, St. Louis	1916	1
		189

College—	Year Grad.	Failed
Bennett Medical College	1914 (1), 1915 (1)	2
Chicago College of Med. & Surgery	1916 (2), 1917 (8)	10
Chicago Hospital College of Med.	1915 (1), 1916 (1)	2
Hahnemann Medical College	1917	1
Jenner Medical College	1912 (1), 1916 (1)	2
Loyola University (Bennett)	1916	1
Marion-Sims-Beaumont	1902	1
Meharry Medical College	1915 (1), 1916 (2)	3
Physicians & Surgeons, St. Louis	1910	1
University of Illinois	1917	1
		24

Society Proceedings

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

The regular monthly meeting of the Chicago Laryngological and Otological Society was held on Tuesday evening, December 19th, at 7:30 o'clock in the rooms of the Graduate School of Medicine.

The President, Dr. Otis H. Maclay, in the Chair.

Dr. Elmer L. Kenyon presented a boy of nineteen with a falsetto voice which had been present since the age of fourteen.

Dr. Joseph Beck read a paper entitled

SALIENT FACTS REGARDING TONSILS IN CHILDREN AND ADULTS. (A reply to the papers and discussions of the last meeting.)

As to indications for operation, that is tonsillectomy whether in children or adults, Dr. Beck made a broad statement, that with enumerating a few contraindications, every tonsil is better out than in and I have no knowledge of a single instance where the patient was worse off from the tonsillectomy than he would have been with the tonsils in. He referred to tonsillectomy and not tonsillotomy, or tonsillectomy and pharyn-

gectomy combined. The contraindications given were:

1. All acute inflammations or infections.
2. Luetic, particularly ulcerative processes.
3. Advanced tuberculosis.
4. Advanced cardiovascular changes, that is in such individuals as would be endangered by any sort of a surgical procedure. This is true in all constitutional diseases where the anemia is very marked, as leukemia, pernicious anemia, etc.
5. Advanced cases of diabetes mellitus.
6. In non-clotting of the blood, as in true hemophiliacs, cholemias.
7. In blood pressure over 225 systolic.
8. In infants below year.
9. In grave mental diseases in which marked excitation is present, as Grave's, Basedow's maniacal state, etc.
10. Anyone that has never had sore throat and is in perfect health, as shown by physical and laboratory examinations.

Dr. Beck said that he was cognizant of the fact tonsillectomies are, have been and perhaps will be performed in many of the above mentioned conditions, but he advised against such procedures. He thought that tonsillectomy was here to stay, and that any effort to stop the splendid work in making a stronger, better race would be a discredit to the profession. It should be the purpose of the profession to improve the technic so as to do away with any and all possible dangers from the operation.

Dr. Beck said that one important bad result reported at the previous meeting was that the scars or deformities cause trouble with a fine voice. He has never seen any bad effect nor heard complaint following a carefully performed tonsillectomy with the capsule. He had developed an operation (intra-capsular tonsillectomy), and following the contraction of these scars there had been complaints of pain in the throat, but they were not lasting.

Another bad effect from a tonsillectomy radically performed was symptoms resembling cretinism and marasmus in infants up to the third year. Consequently, with the rarest exception they do not operate under that age.

Dr. Beck said that since the adoption of general anesthesia a post operative neurosis did not often occur. He thought that the laryngeal reflexes should never be allowed to become abolished for a second. The anesthesia should be just deep enough to have the pharyngeal muscles completely relaxed and the patient be unconscious.

The aspiration of blood, he said, could always be prevented by employing suction and immediate permanent control of the bleeding. They had never had a case of either abscess or pneumonia following tonsillectomy. He thought the best way to do with bleeding vessels was to grasp them and tie them.

The use of iodine or balsam of Peru and olive oil would diminish the secondary reaction of exudate formation and infiltration. Tincture of iodine applied to the fossa or gargling with warm, weak tea and seltzer water in equal parts would relieve the resultant ear aches, pain on swallowing and the distinct nasal twang to the voice.

Dr. Beck had found that the routine use of bicarbonate of soda, 30 to 60 grains, in half a pint of water, introduced per rectum about one-half hour before operation would help to prevent acidosis, which occasionally follows tonsillectomy.

Very frequently the lymphoid tissue at the base of the tongue and back of the posterior pillars will undergo marked hyperplasia, but this does not last long and only in rare instances is it necessary to attack it surgically.

Dr. Beck considered tonsillectomy of benefit in disturbance of the glands of internal secretion. Many such cases being corrected or brought to a standstill by tonsillectomy. He called attention to the recent work done by Rosenau and Nuzum in infantile paralysis which had shown that in practically every child who had a tonsillectomy previous to the attack of the paralysis the disease was mild and complete recovery followed, and all the cases that had the tonsils removed subsequent to the paralysis made a more speedy recovery than those that did not.

The speaker said that one of the most disappointing results following tonsillectomy was the failure to obtain the expected benefit from the operation, either of the local or more frequently general or distant conditions. It had occurred that following a perfect tonsillectomy the patient had had an attack of acute sore throat, an examination had revealed a white spot or two. This was not tonsillitis but a folliculitis in the lymphoid tissue which in many instances had increased as a compensatory factor.

When a general condition, such as articular or periarticular rheumatism, endo-, myo-, or peri-carditis, pleuritis, myositis, neuritis and perineuritis, nephritis with a characteristic blood picture of a chronic septic absorption does not immediately disappear in every instance following tonsillectomy, there appears to be some skepticism as to the value of the procedure. In most of these cases satisfactory results will ultimately ensue, especially if aided by autogenous vaccination and the elimination of other foci. A fair number of patients suffering from the above mentioned conditions fail to improve no matter what is done. An alcoholic neuritis, a brachial plexus neuralgia from pressure of a supernumerary rib or sciatica from pressure of a sliding sacroiliac joint will, of course, not be influenced by tonsillectomy. Dr. Beck thought that otosclerosis, probably due to disturbed function of the glands of internal secretion, was often brought to a standstill by tonsillectomy.

DISCUSSION

Dr. Norval H. Pierce said he was very much relieved at the mildness of Dr. Beck's remarks and considered his views regarding certain matters admirable, but his disagreed with the axiom "that a tonsil is better out than in." He thought that if we accepted such a position it would eliminate all intelligent consideration of the subject. He said the danger to the patient had not been properly appreciated; there was danger from the

anesthetic, danger of shock—whether local or general—the danger of sepsis, the danger of pneumonia, etc.

Dr. Pierce was somewhat changed in his ideas regarding age being a counter indication to the removal of tonsils. He thought if there was a definite indication for removal the question of age should not be a counter indication. He thought that much of the painful sore throat following tonsillectomies was due to the fact that nerves in contact with the tonsillar capsules had been caught in scar tissue, thus causing a radiating pain low down in the throat. As to the depth of the anesthesia, the speaker reiterated his view that it is safer for the patient and much more agreeable for the operator if the laryngeal reflex is abolished.

As to the connection between otosclerosis and the tonsils, Dr. Pierce considered that purely hypothetical. He said there was no one fact that could be brought out to prove that there is a connection between the tonsils and the otosclerosis. He believed that possibly we were on the threshold of very interesting disclosures as to the connection between the tonsils and poliomyelitis, but he thought the experiments that had been performed were still in such a primitive stage that they should hardly be brought out in discussion.

Dr. Arthur M. Corwin said he believed the essayist was eminently sane, and also Dr. Pierce, in most respects. He thought there could not be a wide disagreement among them as to the reasons for a thorough tonsillectomy. When a laryngologist made a thorough examination of his patient, from bald spot to toe nails, he knew whether to advise removal of the tonsils or not, whatever the age of the patient. As to the minor differences in technic and handling hemorrhages, there were bound to be wide variations. He said that however good a man considered his technic and however favorable his average results, it would do him more good to go and watch the other fellow operate than to read volumes or listen to hours of discussion. He never found it necessary to sew pillars together, and has never yet, in many thousands of cases in the old and young, had he found it necessary to ligate an artery in the throat. He thought the thing to do was to take the tonsil out in the technically best and most complete way we knew how—for the right kind of a fee.

Dr. Elmer L. Kenyon thought it was impossible to talk in a final manner on any subject where the knowledge was not yet complete, and certainly it was not complete concerning what we did or might do to the structure of the tonsil when we removed it outside the capsule. He believed that he knew that the so-called capsule of the tonsil could not be separated with any accuracy from the intrapharyngeal aponeurosis. He said he knew from personal knowledge that the palato-pharyngeus muscle had been in certain cases so badly destroyed and the resulting scar tissue so harmful to the soft palate as to render the patient's voice permanently impaired, even when the operation had been done by very skillful hands. He thought that from the standpoint of the singing voice the palato-pharyngeus was especially important.

Dr. George W. Boot thought that the "tonsil habit" was a bad habit for the laity to get. The operation of tonsillectomy is not free from dangers such as amputation of the uvula, injury to the soft palate and pillars. These accidents happen not only to beginners but even to good operators, so that the operation should not be recommended without good cause.

Dr. P. J. H. Farrell said that Dr. Pierce had referred to the question of the anesthetic; he thought it was a well known fact that complete anesthesia was the one which gave the least shock and danger. Dr. Farrell has heard only the last few paragraphs of Dr. Peck's paper; he thought that no case of neuritis was ever cured by operating on the tonsils. As to the effect of tonsillectomy on the voice, Dr. Farrell was sure that no adult voice has even been improved by a tonsil operation and that many thousands of valuable voices have been ruined by such operations. The speaker thought one should be very conservative about operating upon the tonsils of professional singers or speakers. If the palato-pharyngeus muscle is destroyed the case is hopeless, so far as restoring the voice of the singer of public speaker is concerned.

Dr. Robert Sonnenschein said he would take the liberty of speaking in regard to Dr. Corwin's remarks. He had followed his suggestion about seeing other men operate and had learned many things. He had seen Dr. Corwin operate by the Sluder method, and he had used the same method, but he could not understand how it was that he had never had to ligate a vessel. With the most careful technique, Dr. Sonenschein had found it impossible to avoid ligation in some cases.

Dr. Arthur M. Corwin, replying to Dr. Sonnenschein, stated that the ordinary technic which he followed for control of hemorrhage was to operate the patient standing at the patient's right. As soon as he removed the patient's left tonsil his assistant on the left of the patient went in with his finger wrapped with gauze, instantly controlling all hemorrhage. He then reached for the Corwin tonsil hemostat which was fitted with a good sized pad that would fill the sinus, being larger or smaller according to the case. This was put in immediately carrying a little styptic, 25 per cent of tincture of iron in glycerine. He then went after the other, the near tonsil, in the same manner. Dr. Corwin said the hemorrhage could be controlled by these hemostats, finger and sponge carrier by a little judicious pressure—sometimes a little more and sometimes a little less.

Dr. Joseph Beck, in closing, said if he had given the impression of operating every patient he saw he wished to correct it. Tonsils were only taken out of patients when he thought they needed to have them taken out. In the opinion of Dr. Beck the dangers are not at all alarming if you know how to handle the patient. He forestalled the danger of hemorrhage by strictly surgical measures. He thought the hyperplasia following tonsillectomy was not compensatory and did not indicate that the tonsil had a function. He believed that otosclerosis has nothing to do with the tonsils as a local process, but that the chronic infection had to do with whatever caused otosclerosis, and that his cases were better with tonsils removed. They never allowed the laryngeal reflexes to be abolished under anesthesia, but the pharyngeal reflexes were abolished. Dr. Beck could not see why one did not or should not have to ligate a "spurter"; he considered that preferable to going to the patient's room and using more pressure. He thought every operation should be done as quickly as possible. As to neuritis, Dr. Beck agreed that no alcoholic or pressure neuritis had been cured, but infectious neuritis disappeared after the focus of infection was removed.

Dr. Charles H. Long read a paper entitled

ACUTE SUPPURATING MASTOIDITIS WITH TYMPANITIS, PERISINOUS ABSCESS. PHLEBITIS AND STREPTOCOCCEMIA; OPERATION AND RECOVERY

Dr. Long said that acute inflammation of the mastoid process accompanying or following suppurations of the middle ear was a common occurrence, but was rather rare when there was an insignificant cause and no discharge from the external auditory meatus. He reported the case of a female patient age twelve years who entered the Post Graduate Hospital on May 5th, 1916, suffering from chills, fever, vomiting, great prostration and severe pain in the left ear. She had had a severe head cold about the middle of April and later in the month complained of being very chilly. On the afternoon of May 1st, severe pain in the left ear developed and in spite of treatment the patient grew gradually worse.

On May 5th, there was temperature of 104.2° F., pulse 120, respirations 36; no meatal discharge, no tympanitis, membrane red and injected, the nose and throat normal. The ear drum was freely incised, a wick drain inserted and external dry heat applied to

the mastoid. After the paracentesis the pain moved to the opposite side of the head and continued with great severity until relieved by aspirin. The gauze was removed from the meatus, discolored with only dry blood from the incision. The following two days she was free from head pain but more toxemic, sleepless and delirious. There was great variation of temperature, the maximum being 104.6° F., at noon. She was then seized with pain in the region of the appendix and there was involuntary urination. Blood count gave a leukocytosis of 16,000.

On the 9th she was seen by a neurologist who diagnosed lateral sinus thrombosis. No X-ray taken. Indications of meningitis were more pronounced. On the 11th the simple mastoid operation was performed; the inner table was very soft, necrotic, the greater portion being removed with the curet, exposing small pools of pus and masses of exudate which hid the sinus from view. The bone was removed in every direction until healthy dura appeared. With the vein uncovered and examination of the sinus was made with a curved applicator, but it seemed to be free from coagula. To make certain, a long incision was made in the sinus; the blood gushed freely from both ends, no clots appeared and the hemorrhage was controlled by packing.

On the 13th spinal puncture revealed the spinal fluid normal and not under increased pressure. Following this the patient made an uneventful recovery, leaving the hospital June third.

Dr. Long thought that nose and throat cleansing solutions often did more harm than good and that as prophylactic measures in ear infections they were worse than useless.

DISCUSSION

Dr. George W. Boot called attention to the infrequency with which mastoid operations were required in the scarlet fever wards of the Cook County Hospital since nasal irrigations had been stopped as part of the routine treatment of scarlet fever.

Dr. L. J. Hughes, of Elgin, reported the case of a man of thirty-eight who worked in a rather damp place. He had a cold, complained of his hearing and ran a temperature for some time. Middle ear involvement was suspected but nothing positive could be demonstrated until the patient developed a tenderness over the antrum. The ear drum was practically normal, no apparent sign of trouble in the middle ear. When mastoid tenderness appeared he incised the membrane and pus flowed out under high pressure. Under local irrigation and wick drain the condition cleared up without further trouble, but it was hard to localize the infection.

Dr. Joseph Beck said he had had no experience in such a case as Dr. Long's, but was reminded of a case of so-called primary mastoiditis with sinus thrombosis with no history of a cold or nose or throat infection. Chills and fever were present and as the patient came from the South, malaria was suspected. Blood examination proved that it was a septic process. There was no tenderness even about the mastoid, but there was a history of suppuration in the ear long before. Ear examination and hearing were normal, but X-ray examination showed a typically sclerosed mastoid. They operated and found much the same condition that Dr. Long had described. Dr. Beck thought that in cases with chills and fever which the blood examination did not account for, it would do less harm to expose the sinus and have a look at it than to wait a week with meningeal symptoms developing.

Dr. Charles H. Long, in closing the discussion, said that in his case the mastoid operation was delayed owing to the poor co-operation between the laboratory and the consultants.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

The regular monthly meeting of the Chicago Laryngological and Otological Society was held on Tuesday evening, February 20, 1917, at 7:30 o'clock in the rooms of the Graduate School of Medicine of Chicago.

The president, Dr. Stanton A. Friedberg, in the chair.

Dr. Otto M. Rott presented a case for diagnosis.

The patient was a man aged forty years. About a week previously he had suffered from an attack of dizziness, nausea and vomiting, following an argument. He also had a cold at the time and felt some pressure in the ear from the cold. Blowing the nose relieved the feeling of pressure. There was a chronic suppuration in the attic of the right ear which had apparently healed, with the exception of a few crusts, which were removed every month or two. There was spontaneous nystagmus to the left when the patient looked to the left, and the question was whether it was a physiological nystagmus or a nystagmus of the first degree. The results of the hearing test were: Whisper heard at one foot on the right side and two feet on the left. Low whispered tones were heard better than the high; Rinne was negative on the right, positive on the left. On turning to the right with head inclined forward 30 degrees there was a nystagmus of only six seconds to the left. On turning to the left there was no nystagmus. Syringing both ears with cold water produced no nystagmus and no vertigo.

In summing up Dr. Rott said the patient had a dead vestibular apparatus on the right side and an underfunctioning vestibular apparatus on the left. The deafness was of the internal ear type. On the right side there were two factors: middle ear deafness and the internal ear deafness, and there were unmistakable evidences of internal ear deafness on the left as well. Examination of the left ear showed a slight bulging of Schrapnell's membrane, and just what it was due to was a matter for discussion. There was great retraction of the membrane propria. The blood Wassermann reaction was negative, but the spinal fluid gave a 1 plus positive reaction. Dr. Rott had thought of the possibility of a specific labyrinthitis on the left side and evidently the vestibular apparatus on the right was dead.

DISCUSSION

Dr. George E. Shambaugh stated that it was quite clear there were two conditions present in Dr. Rott's ear trouble. In the first place, there was the evidence of the middle ear trouble—strongly retracted drum membranes, with a pathological condition in the region of Schrapnell's membrane. On one

side this consisted of a large perforation with erosion of the bony wall. The presence of a crust along the upper wall of the canal was evidence that the suppurative process was still active. It is this type of condition which not infrequently produces a fistula in the horizontal canal. In the second place, there was unmistakable evidence of a nerve deafness, and this was as marked on one side as on the other. It is not at all probable that a labyrinthitis from middle ear infection would cause simultaneous involvement of the two ears and in about the same degree. Such a condition is usually dependent upon a neuritis resulting from some systemic infection. Of course, a syphilitic infection is the one most frequently responsible for this type of condition.

Dr. J. Holinger read a paper entitled "Congenital Deformities of the Ear."

The specimen of a badly deformed ear gave the occasion to review the literature on the subject and to find the explanation of a number of peculiarities of these deformities in embryology. The labyrinth, the auditory nerve and the central organs of hearing start from the auditory vesicles which begin to be formed in the third week of embryonal life. Deformities here are most often in both ears, they are microscopical and lead to deaf-mutism. Deformities of the external ear have their origin much later in embryonal life, and are most frequently confined to one ear only. Considerable hearing is sometimes found in such an ear. On operating on a deformed ear the function ought to be taken into consideration. This complicates the operation considerably, but the results as to hearing and as to the looks of such an ear warrant the additional work.

DISCUSSION

Dr. George E. Shambaugh said such cases had a good deal of practical interest since deformities of the external ear were met with rather frequently. These children are usually brought to the specialist while they are still quite young by the parents, who are anxious to have an operation to correct the condition. An operation in these cases, of course, should only be undertaken where the abnormality does not involve the internal ear; in other words, where one can demonstrate positively that the function of the internal ear is still present and the operation to be done is one of providing an artificial meatus. The best results that one can hope for is to make an opening that reaches the antrum. It is apparent at once that operations of this kind cannot be undertaken in very young children, since one must wait until one can demonstrate the presence or absence of hearing.

Dr. Joseph Beck stated that he had been working on this subject from the plastic side, and it was certainly a very difficult matter to treat the thing where there was no cartilage, and most cases have a great deficiency of that material. He had recently seen three cases in a family of this ablation of the middle ear, including deafness and in one a congenital partial facial paralysis. The cases were in a cousin and two brothers, and the father of the two boys had volunteered the statement that he was very deaf until the age of twelve, when he suddenly heard, and he was hopeful that the boys would get their hearing. Dr. Holinger had omitted to mention the value of the x-ray in these cases, and the speaker thought that gave a great deal of information as to the bony structure left; very striking pictures are often obtained, as compared to normal mastoids. One might say there were deficiencies around the squama. In the cases of the two brothers, one had practically no ear on one side and on the other there was a lapped ear with just a little dimple on the external canal. The difficulty was to make an opening that would remain; there was a tendency for the opening to close all the time.

Dr. Beck thought that deformities of the ear were very interesting and cited a case of traumatic ear that he had operated that afternoon. He had succeeded in building up an ear from the scalp and body, using the arm as a transplant and expecting to make the ear stiff by using the fascia lata. He recommended the use of this material as changing from soft to tissue of almost bony substance. He had found it excellent for stiffening the ear. It could be obtained from the patient if an adult, and in case of a child it could be obtained from the parent, taking it as close as possible from the trochanter.

Dr. George W. Boot said that a few years ago three children were born in Evanston without cerebra or cranium, and he was fortunate enough to secure the head of one of them. He passed around a section from the labyrinth showing complete absence of the organ of Corti and Reissner's membrane. Apparently the scala media failed to develop and the scari vestibuli and scala tympani were fused into one. The cochlear tube thus formed showed marked deformity.

Dr. Otto M. Rott read a thesis entitled "Indications for Operative Intervention on the Labyrinth in Infective Labyrinthitis Secondary to Suppurative Conditions of the Middle Ear."

After citing in chronological sequence the various opinions held on this subject by a representative body of otologists during the past decade, the author classified these opinions as follows:

(a) Ultra-radical, when the labyrinth operation was advised as soon as any form of labyrinthitis was diagnosed. Jansen was the exponent of this view.

(b) Radical, when the labyrinth operation was advised during the acute stage of diffuse suppurative labyrinthitis, as soon as the diagnosis was made, without waiting for evidences of meningeal involvement. Those who subscribed to this vew were Freytag, Hinsberg, Barany, Neumann, Ruttin, Urbantschitch, Ballenger, Mackenzie, Whiting, Braun and Freisner, Dighton, Leidler, Perkins, and Campbell.

(c) Conservative when the labyrinth operation was advised only when meningitis is threatened or present. Those holding this attitude were Dench, Uffenorde, Barany, Kopetsky, Alexander, Kerrison, Shambaugh, Duel, Henninger, Danziger, Saunders, and Phillips and Broder.

(d) Ultra-conservative when no labyrinth operation was permitted during the acute stage. Blackwell is the exponent of this view.

2. Another interesting phase of the subject, and one which apparently has not been definitely settled, is the question as to the advisability of performing the radical mastoid operation in the presence of an acute, diffuse labyrinthitis, without at the same time opening the labyrinth.

While the consensus of opinion, which in some instances is quite dogmatically expressed, is opposed to the practice of performing the mastoid operation in these cases without at the same time opening the labyrinth, because of the danger of setting up a fatal meningitis, there are a few men who throw the weight of their authority in favor of such a practice in certain instances.

Those who condemn this practice are: Hinsberg, Davis, Barany, Alexander, Kerrison, Ruttin, Mackenzie, Brock, Whiting, Braun and Freisner, Ballenger, and Dighton.

Those who favor the practice under certain conditions are Burger, Duel, Dench, and Broder. Duel thinks it is all right in acute otitis cases, providing all concussion is avoided; and Dench states that the single operation is justified if the labyrinthitis is latent and there are no labyrinth symptoms.

3. Concerning the question of the danger of accidental dislocation of the stapes during the radical mastoid operation, and the bearing of this accident on the indication for opening the labyrinth, only three authors express themselves, namely, Hinsberg, Alexander and Kerrison. Hinsberg and Alexander advise immediate operation on the labyrinth in cases of labyrinthitis following operative trauma, while Kerrison goes one step further and advises the labyrinth operation as soon as the accident occurs, before the labyrinthitis develops. The reason given in each case is that the labyrinthitis which follows this accident usually gives rise to a fatal meningitis.

4. As to the course of procedure in the circumscribed variety, the consensus of opinion is in favor of the principle of non-operative interference on the labyrinth, excepting, of course, the ultra-radical views of Jansen, who operates all cases, whether circumscribed or diffuse. However, Barany, Neumann, and Ballenger state that they would deem the labyrinth operation in circumscribed labyrinthitis justifiable, when the irritable labyrinth continued to give rise to periods of intense vertigo, as to incapacitate the patient for work. Here, particularly if the hearing in the other ear is good, destruction of the irritable labyinth is advised.

From the study of the literature the author offers the following conclusions relative to the indications for operative interference on the labyrinth:

1. In acute, diffuse, suppurative labyrinthitis, the only time a labyrinth operation should be considered is when symptoms of meningeal involvement supervene upon those of the labyrinthine infection.

2. In any other type of diffuse labyrinthitis no labyrinth operation because of the labyrinth condition per se, should be performed. If, however, the middle ear suppuration is of such a type as to present indications for the radical mastoid operation, then the radical mastoid operation should be immediately followed by the labyrinth operation.

3. The only conditions presenting labyrinth symptoms in which the mastoid operation alone is indicated are:

(a) That condition of perilabyrinthitis in which the labyrinth itself has not become involved, and

(b) The circumscribed variety of labyrinthitis with the exception of those cases which continue to give rise to incapacitating symptoms of vertigo and in which hearing in the other ear is good. In this condition the labyrinth operation is indicated.

4. Should the stapes be dislocated accidentally during the radical mastoid operation, or should appearances of the labyrinth capsule (as pus exuding from oval window) at this time, first draw our attention to the possibility of a labyrinthitis, then the safer course would be to open the labyrinth at once.

DISCUSSION

Dr. Alfred Lewy complimented the writer on his excellent review of the literature. He believed there would be less confusion if we divided the labyrinth cases into two groups: those with a live labyrinth and those with a dead labyrinth.

Those with a live labyrinth should not be operated, but put at rest, except that a mastoid operation is done if sepsis or intracranial complications threaten.

Those with a dead labyrinth—that is, those in which there is total deafness and no response to any labyrinth test, are subdivided into two classes: the manifest and the latent. In the manifest cases the patients are put at absolute rest with quiet; no operation is done unless intracranial complications or sepsis supervene, then the labyrinth operation, as well as the mastoid, must be done immediately.

In the latent cases a mastoid operation is done when indicated, and if at this operation actual invasion of the labyrinth is seen, the labyrinth is also operated; otherwise not.

Labyrinthitis occurring after mastoid operation is usually serious, and is treated conservatively. If, however, invasion of the labyrinth was found at the operation, the labyrinth is operated on secondarily.

The operations achieve only drainage, for cure we must depend upon nature's defense, the plastic exudate. There is great danger in interfering with this.

LOGIC

An Easterner, superintendent of an Indian school out in South Dakota, nodded toward a prim, grave little miss.

"Sometimes," said he, "the arguments of children are unanswerable. You see that little girl over there in the second row with straight, black hair tied with brown ribbon? She is a chief's daughter. Her father and mother are decidedly civilized, and she is being brought up in a household as civilized as a New Yorker's. In argument it is almost impossible to get the better of her.

"'I wish I had a new doll,' she said to her mother one day.

"'But your old doll is as good as ever,' her mother replied.

"'So am I as good as ever,' the little miss retorted, 'but the doctor brought you a new baby.'" —*Harper's*

IT DIDN'T FIT

Young William was evincing much interest in the evening paper, but finally a puzzled look came over his countenance.

"Mother," said he, finally, "what does D——d stand for?"

"Doctor of Divinity, my son. Don't they teach you the common abbreviations in school?"

"Sure; but that don't seem to sound right here."

"Read it out loud."

"Witness: I heard the defendant say, 'I'll make you suffer for this. I'll be doctor of divinity if I don't!'"—*Harper's.*

MADISON COUNTY

June Meeting

The Madison County Medical Society met at the Home and School for Nervous and Backward Children on June first, 1917. Our president, Dr. J. B. Hastings, was not present having been called as an officer of the Medical Officers Reserve Corps to Ft. Benjamin Harrison at Indianapolis. Public duties also prevented the attendance of our vice-president, Dr. J. H. Siegel. Dr. E. C. Ferguson, of Edwardsville, was chosen president pro tem.

Nineteen members and thirteen were present.

The minutes of the April and May meetings were read and approved. Dr. Jos. W. Kempff, of Highland, was elected to membership.

On motion of Dr. E. A. Cook, the Alton State Hospital was selected as the place for holding our July meeting and Dr. Cook was asked to make all necessary arrangements.

Dr. R. S. Barnsback as chairman of the committee, presented resolutions on the death of Dr. W. W. Everett of Highland.

In response to a letter from the Alton Public Council, $100.00 was appropriated to the tuberculosis work of the community nurses in the city of Alton. Dr. R. S. Barnsback was instructed to confer with the Alton Public Health Council relative to county tuberculosis nurses and to make such arrangements as was deemed best in his judgment.

In the absence of Dr. J. B. Hastings, the president's annual address was read by Dr. E. A. Cook. The subject of the paper was "The Duties of the General Practitioner Toward the War Situation," and outlined the necessity of a generous response by the profession to call by the government for medical men to act as medical officers in the army now forming. The paper was an excellent one and was generously discussed and by vote was ordered printed in the ILLINOIS MEDICAL JOURNAL. Dr. Mather Pfeiffenberger in his "Echoes From the State Meeting," gave a general resume of the work done in the House of Delegates which was very interesting, particularly to those members who were not present at the state meeting.

Dr. Carl E. Black, chairman of the State Centennial Commission urged all present to assist in securing a full history of the medical work done in the state during the past century. Drs. Bliss, Johns and Sewald of St. Louis presented quite a number of unique and instructive pathological specimens taken at the City Sanitarium of St. Louis, of which Dr. Johns is superintendent. The presentation of these added very much to the interest of the meeting. Dr. E. A. Cook introduced the following resolutions, which were adopted without dissenting vote:

Whereas, The members of the Madison County Medical Society are in sympathy with the Medical Officers Reserve Corps and deeply interested in the individual members of the society; therefore be it

Resolved, That to all members who may go to serve our country and humanity, we pledge our support in any way possible. Also that we direct our interest and attention in a kindly way to their families whose welfare we have at heart; furthermore, be it

Resolved, That we follow the suggestion of our president, Dr. Hastings, and prepare ourselves on military sanitation and its allied branches.

A unanimous vote of thanks was given to our speakers, after which elegent refreshments were served by our host and hostess for which, and for the genial hospitality extended, a rising vote of appreciation was tendered. Adjourned to meet at the Alton State Hospital on the first Friday in July.

July Meeting

The Madison County Medical Society met on the grounds of the Rock Springs Country Club in Alton on July 6, 1917, with the president, Dr. J. H. Siegel, in the chair. Twenty members and twenty-three were present.

The minutes of the last meeting were read and approved. Dr. Wm. H. Dempsey was elected to membership. The transfer card of Dr. H. P. Macnamara of Granite City, from the Sangamon County (Ill.) Medical Society, was read, upon motion, the same was accepted and Dr. Macnamara was entered as a member of this society.

The secretary announced Collinsville as the place for the next meeting. On motion, the local profession were requested to select a suitable meeting place. On motion of Dr. W. H. C. Smith, the secretary was instructed to send greetings to our president, Dr. J. B. Hastings, at Ft. Benjamin Harrison. Dr. E. B. Coolley of Danville made a highly appreciated address on patriotism with especial reference to the duties of medical men toward the government. The address was given marked attention and was received by the hearers with the seriousness demanded by the occasion. Dr. Ferguson moved that a vote of thanks be given our speaker for his presence and for his splendid address.

Refreshments were provided by the local profession for which a rising vote of thanks was tendered.

On motion adjourned to meet in Collinsville on the first Friday in August.

PIKE COUNTY

The Pike County Medical Society met in Nebo on July 31st, and held one of its most successful meetings. The day was clear, roads very good for motoring, and the fields on every hand showing a splendid prospect for almost all kinds of crops. In this part of the state, the Doctor's prosperity depends much on Ceres; hence much interest is taken in all the fruits of the fields.

A fine chicken dinner was provided and thoroughly enjoyed by everybody. The meeting was held in the Christian Church and many of the laity were present to hear medical matters discussed. In addition to the members of this society there were present, Drs. McReynolds of Quincy, Adams, Black, Dewey, Jones, Milligan, Morgan, and Stacy of the Morgan County Society, and Dr. Hetherlin of Pike County, Mo., Society.

Dr. McIntosh of Chambersburg, and Dr. Emma Gay of Rockford were elected to membership. The application for membership of Dr. Dinsmore of Nebo was presented and will be voted upon at the next regular session.

A report of the committee appointed to interview the board of supervisors relative to pauper practice in the county was made by Dr. Peacock. It showed an apparent understanding would be reached that would be satisfactory to all.

Dr. McReynolds of Quincy then presented an extremely interesting paper on "War Surgery in France, as it is at Present." The doctor has just returned and is going back soon, so that the personal presentation of the subject by a participant had more than usual significance. It received marked atention, also the photographs and war relics which were passed around for inspection.

After this Mrs. Wells and daughter of Pleasant Hill each sang several solos with violin obligato, which were much enjoyed by all.

Dr. Kuntz of Baylis then read an exhaustive paper on "Gall Stone Disease," which showed much research. This was discussed by Drs. Black, Stacy, Milligan and others. The society then adjourned to meet at Pittsfield at the next regular session.

W. E. Shastid, Secy.

Personals

Dr. Charles Adams has returned after a stay of several months in the Hawaiian Islands.

Dr. Norman Bridge, Los Angeles, spoke, June 20, before the Intercollegiate Club.

Dr. George A. Zeller, Peoria, has been appointed superintendent of the Alton State Hospital.

Dr. H. Douglas Singer, Hospital, has been appointed alienist to the department of public health.

Dr. Herman M. Adler, Boston, has been appointed criminologist to the state department of public welfare.

Capt. Frederick O. Frederickson has been commissioned major, and assigned to command of Field Hospital No. 3.

Dr. Sidney D. Wilgus, Rockford, has declined the position offered him as superintendent of the Chicago State Hospital.

Dr. Henry B. Carriel, Jacksonville, has been appointed state superintendent of the Dixon School and Colony for epileptics.

Dr. Allen B. Kanavel delivered a lecture before the City and County Medical Society, Portland, Ore., July 16, on "Infections of the Hand."

Dr. S. Victor Balderston, Evanston, director of the Northwestern Ambulance Company, No. 9, has been commissioned captain, M. O. R. C., U. S. Army.

Dr. Willis O. Nance, Chicago, was appointed a member of the consulting staff of Cook County Hospital, June 25, to succeed the late Dr. John B. Murphy.

Dr. Cyrus H. Anderson, McLeansboro, has been appointed superintendent of the Anna State Hospital, succeeding Dr. Joseph A. Campbell (resigned).

Dr. Eugen Cohn, assistant superintendent of the Chicago State Hospital, has been appointed superintendent of the Kankakee State Hospital, and will take charge of the Institution, August 15th.

Dr. Hugh McGuigan recently lectured before the faculty and students of the Graduate Summer Quarter in Medicine of the University of Illinois on "Blood-Sugar in Relation to Diabetes."

Dr. Wallace C. Abbott, Chicago, has been elected president and Dr. George H. Searle, Chicago, secretary-treasurer of the American Association of Pharmaceutical Chemists at its annual meeting in Atlantic City, June 13.

Dr. George Thomas Palmer, Springfield, has been appointed assistant director of the state department of health and is in charge of the defense of Illinois troops from tuberculosis, which is said to have been so prevalent in the European armies.

News Notes

—Dr. Lillian Hobbs-Seymour, Chicago, was convicted of murder after a criminal operation, July 13.

—Dr. T. B. Spalding, who practiced medicine in Edwardsville about 40 years ago, is now living at an advanced age in Tuscara, Cal.

—Be sure to read the June number of the Illinois Medical Journal. It is intensely interesting.—*The Madison County Doctor.* Thanks! It will always be worth reading with your help.

—The last meeting of the Montgomery County Medical Society was held at Nokomis Tuesday evening, July 3rd. Dr. M. H. Irwin read a very interesting paper on "Amebic Dysentery."

—Dr. Perry H. Wessel, Moline, is defendant in a suit for having performed an autopsy on the mangled body of a man who was unidentified at the time.

—Plans for the proposed La Salle County Tuberculosis Sanatorium have been submitted to the supervisors. The institution will cost $65,000 and will accommodate about fifty patients.

—Illinois Field Hospital Company No. 4, commanded by Major James J. McKinley, was mustered into the federal service, July 21, by Capt. Edward G. Huber, M. C., U. S. Army.

—The new building of the Chicago Lying-In Hospital was opened recently. The hospital will have 120 beds and will be "open," i. e., any reputable physician may treat patients in the hospital.

—Illinois Field Ambulance Company No. 1 was mustered into service, July 22, by Lieut.-Col. Jacob Frank, chief surgeon, Ill. N. G. The company is under the command of Capt. George U. Lipshulch.

—Governor Lowden signed a bill appropriating $20,000 for investigation, by the health insurance commissioner, of sickness and death claims of families not covered by the workmen's compensation act.

—The Medical Women's Club of Chicago had its annual meeting, June 13, and elected the following officers: Dr. Clara P. Seippel, president; Drs. Louise Acres and Helga Ruud, vice presidents; Dr. Mary Agnes B. Mulcahy, secretary, and Dr. Grace H. Campbell, treasurer.

—At the annual meeting of the board of directors of the Physicians' Club of Chicago, Dr. Arthur M. Corwin was elected president, Dr. Henry W. Cheney, treasurer, and Dr. William D. Napheys, secretary. The other directors are Drs. John Weatherson, Daniel N. Eisendrath and A. Augustus O'Neill.

—The following members of the new board to examine medical practitioners have been named by Francis W. Shepardson, director of the department of registration and education: Dr. L. C. Taylor, Springfield; Dr. Carl E. Black, Jacksonville, and Dr. J. A. Robison, Dr. G. M. Cushing and Dr. W. L. Noble, Chicago.

—The Western Suburbs Anti-Mosquito Association, which includes the suburbs of Maywood, Forest Park, River Forest, Melrose Park, Bellewood, Oak Park, the forest preserves and Aurora, will endeavor to eliminate the mosquito from the western suburbs of Chicago, by spraying crude oil on the surface of all ponds and swampy places.

—The following committee has been appointed ta arrange for the care of soldiers and sailors of the United States and their dependent families: Drs. E. Wyllys Andrews, Arthur Dean Bevan, Frank Billings, Joseph P. Cobb, Arthur M. Corwin, John M. Dodson, Allen B. Kanavel, Lewis L. McArthur, Albert J. Ochsner, A. Augustus O'Neill (chairman), William E. Quine, Thomas E. Roberts, John A. Robison, George H. Simmons, Homan Spalding, Samuel C. Stanton, Daniel A. K. Steele and Clarence L. Wheaton (secretary).

—The Iowa and Illinois Central District Medical Association, at the meeting in Davenport, July 12, elected the following officers: president, Dr. Louis Ostrom, Rock Island; vice-president, Dr. William Rendleman, Davenport; secretary, Dr. L. W. Littig, Davenport; treasurer, Dr. F. H. First, Rock Island; reporter, W. D. Chapman, Silvis. Drs. J. W. Seids, Moline, and G. F. Harkness, Davenport, were re-elected on the board of censors. Their terms expired at this meeting. The board is of the same personnel as before, Drs. W. L. Allen, Davenport, and L. C. Moore, Reynolds, being the other members.

—Steps to weed out all tubercular soldiers from the Illinois national guard were taken Aug. 4th, when the war department ordered ten contract surgeons to Chicago to examine the men.

The surgeons called into active service from Washington are:

Drs. Willard W. Dicker, Harry G. Hardt, John Ritter, N. C. Nelson, Robert H. Hayes, Edward M. Heacock, Ethan Allen Gray, George A. Gardner, Daniel W. Rogers and B. Westcott Rogers. First Lieutenant Walter W. Hamburger of the medical reserve corps was ordered to report to General Barry as head of the tuberculosis examining board.

Captain John M. Willis, medical corps, was designated as sanitary officer of the camp at Houston, where the Illinois guard will train.

—The National Board of Medical Examiners held its second examination in Washington, D. C., June 13 to 21. There were twenty-four qualified candidates, twelve of whom appeared for examination, the others having been ordered into active duty between the time of their application and the date of the examination. Of the twelve who took the examination nine passed.

The next examination will be held in Chicago, October 10 to 18. The regular Corps of the Army and Navy may be entered by successful candidates, without further professional examination, providing they meet the adaptability and physical requirements.

There will also be an examination in New York City in the early part of December.

Marriages

ALLEN JOSEPH HRUBY, M. D., to Miss Sylvia Petrtyl, both of Chicago, May 16.

THOMAS HENRY LEWIS, M. D., to Mrs. Charles Mair, both of Chicago, June 16.

EDWARD G. SCHUSSLER, M. D., Oak Lawn, Ill., to Miss Grace E. Hart of Mount Forest, Ill.,

CAPT. ELBERT CLARK, M. O. R. C., U. S. Army, to Miss Helen Johnson, both of Chicago, July 11.

WALTER GEORGE MCGUIRE, M. D., to Miss Frances Elizabeth McCormick, both of Chicago, June 20 .

CHARLES ERWIN PITTE, M. D., to Miss Ethel Julia Lyon, both of Chicago, recently.
June 20.

Deaths

JOSEPH L. ABT, M. D., Chicago; University of Michigan, Ann Arbor, 1892; College of Physicians and Surgeons, Chicago, 1893; a Fellow of the American Medical Association; and instructor in Northwestern University Medical School and a member of the staff of the Post-Graduate hospital; died in Eagle, Wis., June 28, after a nervous breakdown.

WILLIAM HERMAN BELL, M. D., Bellevue, Ohio; University of Michigan, Ann Arbor, 1892; aged 46; formerly a member of the Ohio State Medical Association; died in Dr. Reed's Hospital, Cincinnati, May 24, after an operation on the colon.

WILLIAM J. CHEANY, M. D., Petersburg, Ill.; Rush Medical College, 1892; aged 47; formerly a member of the Illinois State Medical Society; died in Hot Springs, Ark., June 7.

JOHN EUGENE GARREY, M. D., Aurora, Ill.; Rush Medical College, 1878; aged 69; formerly a member of the Illinois State Medical Society; a member of the staff of the Aurora City Hospital; died in Telluride, Colo., June 29.

DANIEL FREDERICK GRASSE, M. D., Chicago; Rush Medical College, 1899; aged 43; formerly a member of the Illinois State Medical Society; assistant in genito-urinary surgery in his alma mater; died from meningitis in the Elgin State Hospital, July 3.

NELSON HORATIO LOWRY, M. D., Woodhull, Ill.; Hahnemann Medical College, Chicago, 1872; aged 70; for half a century a practitioner of Woodhull; a veteran of the Civil War; died at his home, May 22, from cerebral hemorrhage.

JAMES H. RAINWATER, M. D., New Canton, Ill.; Missouri Medical College, St. Louis, 1889; aged 58; a Fellow of the American Medical Association; died at his home, May 13, from pneumonia.

FRANK WILDER RASTALL, M. D., Chicago; Loyola University, Chicago, 1907; aged 40; a veteran police ambulance surgeon of the city; was instantly killed, July 2, in a collision between his ambulance and an automobile truck.

JOHN WESLEY SAUCERMAN, M. D., Winslow, Ill.; Rush Medical College, 1863; aged 79; formerly a member of the Illinois State Medical Society; died at his home, July 2, from cerebral hemorrhage.

GEORGE W. VEACH, M. D., Wilmette, Ill.; Western Reserve University, Cleveland; aged 93; for more than forty years a practitioner of New Castle, Pa.; died at his home, June 2.

HIRAM K. WHITNER, M. D., Chicago; Jefferson Medical College, 1859; aged 81; surgeon of United States Volunteers during the Civil War; for many years an inventor; died at his home, June 13.

Book Notices

THE SURGICAL CLINICS OF CHICAGO, Volume I, Number 3 (June, 1917). Octavo of 231 pages. 70 illustrations. Philadelphia and London: W. B. Saunders Company. 1917. Published bi-monthly. Price per year, paper, $10.00; cloth, $14.00.

This volume of clinics represents the clinics of twenty-one surgeons in the various hospitals of Chicago. Many interesting and instructive cases are noted. We believe these clinics have established a firm following, as they represent the work and efforts of some of the best surgeons in America.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEYS. By Robert H. Greene, M. D., Professor of Genito-Urinary Surgery at the Fordham University, New York; and Harlow Brooks, M. D., Professor of Clinical Medicine, University and

Bellevue Hospital Medical College. Fourth edition, thoroughly revised. Octavo of 666 pages, 301 illustrations. Philadelphia and London: W. B. Saunders Company. 1917. Cloth. $5.50 net; half morocco, $7.00 net.

This new edition of Greene & Brooks is one of the best works in the English language on the diseases of the genito-urinary organs and kidneys. Both the medical and surgical sides are treated thoroughly, as this work is the result of the combined efforts of an internist and a surgeon, making it an extremely valuable treatise. The personal experience of both authors is extensively drawn upon. Although a large book, no padding is observed. It is thoroughly up to date and should prove a useful aid to both physician and surgeon.

1916 Collected Papers of the Mayo Clinic, Rochester, Minn. Octavo of 1014 pages, 411 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, $6.50 net; half morocco, $8.50 net.

The Mayo Papers are the result of an endeavor to place before the profession the work done by the staff of the Mayo clinic. No one can deny the usefulness of such a volume, as it places in one's hands the work and efforts of a body of highly skilled men, each a leader in his particular branch of medicine and surgery. A collection of papers such as this is bound to increase the knowledge and skill of the reader, as the papers are practical as well as scientific.

The book is divided into sections on the alimentary canal, the urogenital organs, the ductless glands, the blood, the head, trunk and extremities, technic and general. An index of contributors, a bibliographic index and an index of subjects are included. The bibliographic index is quite extensive, and furnishes a medium for more extensive study.

The value of this volume cannot be appreciated without personal examination, except it be by those who are possessors of the previous volumes.

The Elements of the Science of Nutrition. By Graham Lusk, Ph. D., Sc. D., F. R. S., (Edin.), Professor of Physiology at Cornell Medical School, New York. Third edition, reset. Octavo of 641 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1917. Cloth, $4.50 net.

The rapid increase in the knowledge of the importance of nutrition as a means of treatment of various diseases, such as diabetes, nephritis, gout, Graves' disease, myxoedema, anemia, etc., has resulted in this third edition of Lusk. Its value cannot be gainsaid. The subject is presented in a thoroughly scientific manner.

There are chapters on diet in the normal individual, the growing, and the influence of protein foods, fats and carbohydrates, on metabolism. Many important items are noticed throughout the book. The present edition has about 240 more pages than the second edition, necessitated by the extensive use of dietic treatment in disease. It should be a useful edition in the doctor's library.

A Text-Book of First Aid and Emergency Treatment. By A. C. Burnham, M. D., Medical Corps, U. S. R., Instructor in Surgery in the Polyclinic Hospital, New York City; Attending Surgeon, Department of Surgery, Vanderbilt Clinic, College of Physicians and Surgeons, New York City. Illustrated with 160 engravings and 2 plates. Price, $2.00. Lea & Febiger, Philadelphia and New York, 1917.

This is a book prepared to train the volunteer assistant, the camper, the sanitary corps of the Army and Navy, boy scouts, nurses' aids, and others interested in the principals of first aid and emergency treatment. Particular stress is laid upon the diagnosis and treatment. No superfluous matter is incorporated, and only methods of treatment that are of proven value are given. The language is plain, and methods of treatment gone into fully. For those interested this book can be recommended for study.

The Treatment of Emergencies. By Hubley R. Owens, M. D., Surgeon to the Phila. General Hospital; Asst. Surgeon to the Phila. Orthopedic Hospital and Infirmary for Nervous Diseases; Chief Surgeon to the Phila. Police and Fire Bureaus; Asst. Surgeon Medical Reserve Corps, U. S. Navy. 12mo. volume of 350 pages with 249 illustrations. Philadelphia and London, W. B. Saunders Company, 1917. Cloth, $2.00 net.

This first aid book is written by a physician who has had an extensive experience in the treatment of emergencies, based upon lectures delivered by him to various bodies of students interested in this particular topic. It is complete enough to enable one familiar with its contents to render safe and efficient first aid. It can be recommended not only to the medical student, but also to those who are often placed in a position when knowledge of first aid is essential or necessary.

Urology. Diseases of the Urinary Organs, Diseases of the Male Genital Organs, The Venereal Diseases. By Edward L. Keyes, Jr., M. D., Ph. D., Professor of Urology, Cornell University Medical College; Surgeon to St. Vincents and Urologist to Bellevue Hospital. With 204 illustrations in the text and 18 plates, 4 of which are colored. D. Appleton & Co., 1917. New York and London.

One has only to compare the present Keyes' Urology with the one of 1904 to realize the immense progress in urology in the last thirteen years. The Keyes of today is an altogether different book—a new book in fact as well as name. Modernism without fadism or dogmatism is observed throughout its pages. An extensive personal experience, with the results obtained, is drawn upon to increase its value.

The book is divided into five parts—the principles

of urology, gonorrhoea and diseases of the urinary organs, diseases of the genital organs, operative surgery and an appendix on syphilis, all of which are excellent and thorough.

The illustrations are numerous and good. A pleasant change noted is in the use of paper not so highly glazed, which makes it more comfortable to read. We bespeak a successful future for the new Keyes.

HANDBOOK OF GYNECOLOGY FOR STUDENTS AND PRACTITIONERS. By Henry Foster Lewis, A. B., M. D., Professor and Head of Department of Obstetrics and Gynecology in Loyola School of Medicine; Chief of Obstetrical Staff of Cook County Hospital; Fellow and Ex-President of the Chicago Gynecological Society; Late Assistant Professor of Obstetrics and Gynecology in Rush Medical College; and by Alfred de Roulet, M. S., M. D., Professor of Gynecology in Loyola University, School of Medicine; Attending Gynecologist in the House of the Good Shepherd and in St. Bernard's Hospital; Obstetrician and Chief of Staff of St. Margarets Home and Hospital. With 177 illustrations. Price $4.00. C. V. Mosby Company, St. Louis, 1917.

The authors have endeavored to supply a text-book of gynecology based upon their experience as teachers and clinicians. No attempt has been made to make it more than a hand-book, as they well state that "they have tried to appreciate that gynecology is a lesser subject than medicine, surgery or obstetrics." No extensive descriptions of major operations are given, the authors being of the opinion that experience and not descriptions of operations make surgeons. However, the subject is very well presented, no method of diagnosis or treatment of value being overlooked. It is extensive enough both for the student and the practitioner, not specializing in this particular field. The illustrations are good and mostly original. It should be well received.

IMPOTENCY, STERILITY AND ARTIFICIAL IMPREGNATION. By Frank P. Davis, Ph. B., M. D., Fellow American Medical Association; Ex-Secretary Oklahoma State Board of Medical Examiners; Former Superintendent Oklahoma State Institution for Feeble-Minded; Author of "How to Collect a Doctor Bill," "The Doctor: His Book of Poems," "The Physician's Vest-Pocket Reference Book," etc.; Formerly Editor and Publisher, Davis' Magazine of Medicine. C. V. Mosby Company, St. Louis. 1917.

This is an interesting little volume based on the results of the author's investigation and experience. Its small size is rather an advantage, as the author has succeeded in presenting the subject thoroughly without padding or repetition. For those interested in these subjects it should prove useful.

ROENTGEN TECHNIC (DIAGNOSTIC). By Norman C. Prince, M. D., Attending Roentgenologist to the Omaha Free Dental Dispensary for Children; Associate Roentgenologist to the Douglas County Hospital, Bishop Clarkson Memorial Hospital, Swedish Immanuel Hospital, St. Joseph's Hospital, and Ford Hospital, Omaha, Neb. With Seventy-one Original Illustrations. Price, $2.00. C. V. Mosby Company, St. Louis, Mo., 1917.

This book is written especially for the general practitioner who has installed X-ray apparatus. It should enable one to use his apparatus intelligently and furnish plates of value. It can be recommended to all owners of X-ray apparatus for its value in increasing their technical ability.

PHYSICAL EXERCISES FOR INVALIDS AND CONVALESCENTS. By Edward H. Ochsner, B. S., M. D., F. A. C. S., President, Illinois State Charities Commission; Attending Surgeon, Augustana Hospital, Chicago. Illustrated. C. V. Mosby Company, St. Louis. 1917. Price, $75c.

This book is one that the author felt was needed for the instruction of his patients during convalescence, for invalids and persons leading a sedentary life. Its low price and simplicity should recommend it for extensive use among those for whom it is intended. A knowledge of its contents will aid the physician in the use of physical exercise when indicated.

MEDICAL AND SURGICAL REPORTS of the Episcopal Hospital or the Protestant Episcopal Church in Philadelphia. Volume 4. Press of Wm. J. Dornan, 1916. Philadelphia.

The report of the Episcopal Hospital of Philadelphia gives somewhat of a history of the institution since its beginning in 1852. A more detailed report is made up for the year 1916. Many interesting cases are cited in detail, and a number of illustrations accompany the case citations. The report is nicely made up and bound.

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in medicine and surgery, under the general editorial charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume III, The Eye, Ear, Nose and Throat, edited by Casey A. Wood, C. M., M. D., D. C. L.; Albert H. Andrews, M. D.; George E. Shambaugh, M. D. Series 1917. Chicago, The Year Book Publishers, 608 South Dearborn street.

No one can appreciate the value of these series so much as when endeavoring to look up the latest advances in medicine or surgery in his library and finds his book obsolete. The owners of these series, as they appear from time to time, will be fully conversant of all that has occurred in the preceding year which is of value in the practice of medicine. Almost all the abstracts are extensive enough to make them of genuine worth, and with the references they place one in command of the latest advances.

The present volume on the Eye, Ear, Nose and Throat fully complies to all that is expected of it, the editors being eminently qualified in their various departments.